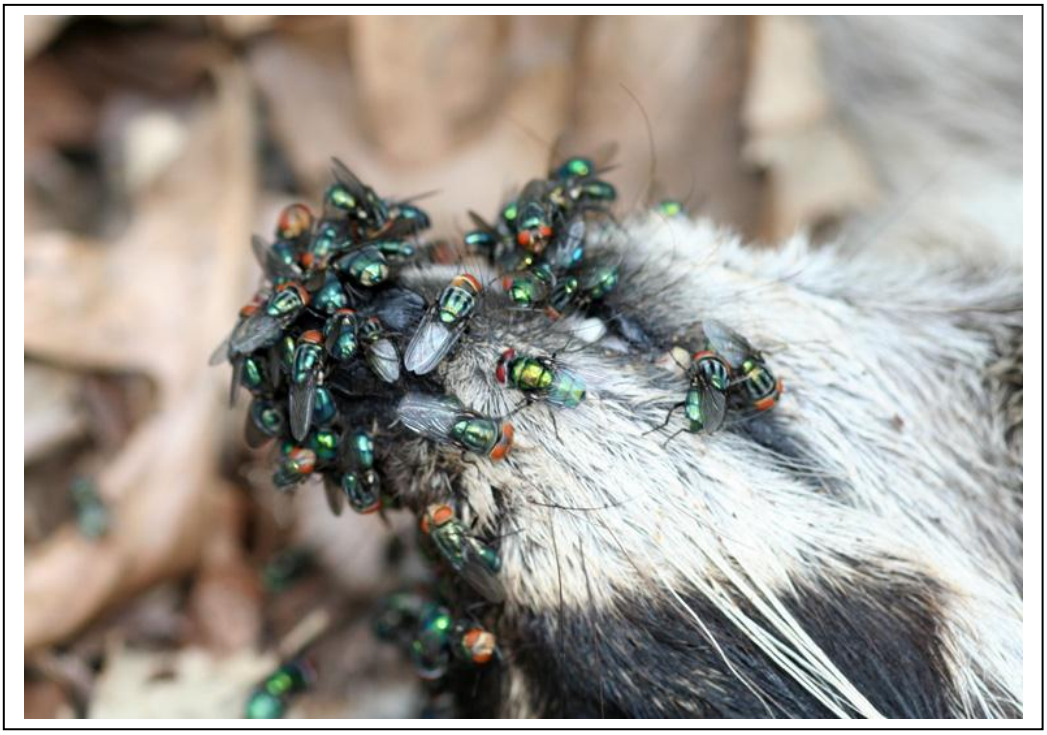
Insects of Western North America

7. Survey of Selected Arthropod Taxa of Fort Sill, Comanche County, Oklahoma.

4. Hexapoda: Selected Coleoptera and Diptera with cumulative list of Arthropoda and additional taxa



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C.P. Gillette Museum of Arthropod Diversity
Colorado State University, Fort Collins, CO 80523-1177

Insects of Western North America.
7. Survey of Selected Arthropod Taxa of Fort Sill, Comanche County, Oklahoma.
4. Hexapoda: Selected Coleoptera and Diptera with cumulative list of Arthropoda and additional taxa

by

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Cover Photo Credits: Whitney S. Cranshaw. Females of the blow fly *Cochliomyia macellaria* (Fab.) laying eggs on an animal carcass on Fort Sill, Oklahoma.

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Contents

List of Tables

EXECUTIVE SUMMARY

Faunal and floral surveys on Federal lands are critical in the monitoring, conservation, and management of our Nation's natural resources. Additionally, Federal lands often sustain unusual biodiversity. Integrating the knowledge gained from surveys, such as this, into management plans and activities on Fort Sill, Comanche County, Oklahoma may help reduce or prevent effects to native communities from activities associated with military construction and field exercises.

Moreover, such surveys are necessary to discover any species protected under the U.S. Endangered Species Act of 1973. Further, the presence of any other species listed by the State of Oklahoma as protected or sensitive, while not a legal mandate, can be included in management plans to prevent these species from becoming more vulnerable. The Endangered Species Act requires that no Federally funded activity, including those of the military, jeopardize the continued existence of listed Endangered or Threatened species or result in the destruction or adverse modification of their critical habitats.

Collection of such data is required for compliance with the National Environmental Policy Act of 1969. Identifying and documenting the locations of any listed, proposed, or candidate species on an installation are crucial to effectively balancing mission and conservation requirements. Army regulation 200-3 (1995) Sec. 11-11 states: "Installations will conduct initial, thorough inventories of plants, fish, wildlife, and habitat types on installation lands, using scientifically acceptable methodology. Installations will conduct a 100 percent inventory of suitable habitat for listed, proposed, or category 1 candidate species that may occur on the installation." Compliance with these policies and regulations requires knowledge of the numbers and habitats of rare species on an installation.

This is our fourth of a series reports on the inventory and status of selected insect and other arthropod groups at Fort Sill. In this publication, we report on the metallic wood boring beetles, leaf beetles, lady beetles, dermestid or skin beetles, click beetles, blister beetles, blow flies, mosquitoes, soldier flies, syrphid or flower flies, and horse and deer flies found on Fort Sill. These groups of arthropods are important components of the ecosystems occurring on Fort Sill, and are considered good indicator groups for evaluating environmental disturbances (Samways, 1994). Additionally, the mosquitoes are important vectors of diseases of humans and domesticated animals. Our primary purpose was to discover whether any Federally listed, proposed, or candidate species occurred on Fort Sill. Secondarily, we wished to find out whether any sensitive or protected species listed by the State of Oklahoma occurred on the Fort.

Our April 2006 to September 2006 survey revealed at least **298** species. None of these species are Federally listed, proposed or candidate species, and none are protected or being considered by the State of Oklahoma.

Summary and Management Considerations

Of the insects included in this report and collected on Fort Sill, at least **41** insect species are considered new state records for Oklahoma, a state that has been relatively well documented for many groups of arthropods (www.ento.okstate.edu/museum/museum.htm). The following new state records discovered during this survey are noted: *Chrysolina flavomarginata* (Say), *Ophraella americana* (Fab.), *Diabrotica tibialis* Jacoby, *Metrioidea blakeae* (Wilcox), *Systena dimorpha* Blake, *Lysathia ludoviciana* (Fall), *Omophoita cyanipennis octomaculata* (Crotch), *Colaspis crinicornis chittendeni* Blake, *Pachybrachis confusus* Bowditch, *Pachybrachis parvinotatus* Fall, *Pachybrachis vau imperfectus* Fall, *Bassareus clatharatus* (Melsheimer) (Coleoptera: Chrysomelidae); *Aeolus trilineatus* Candeze, *Agriotes insanus* Candeze, *Ampedus fuscatus* (Melsheimer), *Anchastus rufus* Candeze, *Esthesopus praeditus* Horn, *Glyphonyx ferruginosus* Schaeffer, *G. helix* Smith and Balsbaugh, *Megapenthes angularis* LeConte, *M. insignis* (LeConte), *Melanotus decumanus* (Erichson), *M. emissus* (LeConte), *M. hyslopi* Van Zwaluwenberg, *M. opacicollis* LeConte, *M. testaceus* (Melsheimer), *M. trapezoideus* (LeConte), *M. verberans* (LeConte), and *Neotrichophorus carolinensis* Shaeffer. (Coleoptera: Elateridae); *Epicauta brunnea* Werner, *Epicauta mimetica* (Horn), *Nemognatha piazata bicolor* LeConte, *Nemognatha sparsa* LeConte, and *Pyrota lineata texana* Dillon (Coleoptera: Meloidae); *Allograpta exoticus* (Wiedemann), *Chrysogaster antithesus* Walker, *Copestylum vittatum* (Macquart), *Microdon laetus* Loew, *Palapada agrorum* (Fab.), *Palapada alhambra* Hull (Diptera: Syrphidae); and *Tabanus rufofrater* Walker (Diptera: Tabanidae).

In previously targeted groups (Kondratieff et al. 2003, Opler 2005), the following are new state records for Oklahoma collected during this survey included: *Lebia ornata* Say, *Pentagonica picticornis* Bates, *Pseudaptinus tenuicollis* (LeConte), *Tetragonoderus fasciata* (Halderman) (Coleoptera: Carabidae), *Aphodius pseudolividus* Balthasar, *Ataenius platensis* (Blanchard), *Canthon* (*Melanocanthon*) *nigricornis* (Say), *Platytomus longulus* (Cartwright) (Coleoptera: Scarabaeidae), *Chlorochroa persimilis* Horvath, *Holcostethus abbreviatus* Uhler (Hemiptera: Pentatomidae); and *Eccritosia zamon* (Townsend) (Diptera: Asilidae).

These species are discussed under each specific arthropod group. In regard to **Conservation Assessments,** no species was found during the survey that is federally listed endangered or threatened taxa. In addition, no species collected during this survey was found that is considered a candidate for federal listing http://endangered.fws.gov/wildlife.html - Species. Additionally, no species listed by the Oklahoma Natural Heritage Working List of Rare Oklahoma Invertebrates (ftp://www.biosurvey.ou.edu/pub/inverts0503.pdf) were found on Fort Sill. Additional efforts should be made to locate other populations on Fort Sill. These areas should be protected from extensive disturbances.

The community and ecosystem diversity of Fort is exceptional. It is highly recommended that all aquatic and terrestrial habitats on Fort Sill be managed for the least possible disturbances that are the result of military training and activities outside the cantonment and impact zones. Apparently, these activities have not currently substantially impacted much of the landscape outside the cantonment and impact zones. This approach should be maintained.

Kondratieff et al. (2004) and Opler (2005) have previously suggested management considerations for lakes, ponds, reservoirs and streams of Fort Sill. It is strongly recommended again that these suggestions be considered. In addition, substantial patches of native grassland and woodland should be managed for terrestrial arthropod sustainability, several permanent ponds should be left unstocked with fish to maintain populations of lake inhabiting species of mayflies, dragonflies and damselflies, true bugs, fishflies, alderflies, caddisflies, and aquatic beetles. In regard to streams, preventing unnecessary crossing of the major streams of Fort Sill by heavy vehicles should be restricted, preventing streambed disturbance, increased sedimentation, and riparian vegetation loss. Protecting streamside vegetation and any future alterations of the outlet structures of the existing dams or new dams should be carefully considered in terms impacts on aquatic biota.

It is strongly emphasized that **Fort Sill is truly an oasis of biodiversity** in the south-central region of Oklahoma. Its landscape traverses the elevated eastern edge of the Wichita Mountains on the Quanah Range to the rolling mixed and tall grasslands of the eastern part of the Fort. In almost all the groups of arthropods surveyed by Kondratieff et al. (2003, 2004); Opler (2005) and this report, more than **1,412 species** of arthropods were identified (Appendices A, B, C, D, E, F, G) with an average of about 38% of the known Oklahoma species occurring on Fort Sill (Table 1). Including other species of insects not included as target groups but identified and deposited in the C. P. Gillette Museum of Arthropod Diversity, Colorado State University, over 2,100 species of insects and other arthropods were collected during the above surveys from Fort Sill. Many of these species are considered rare or uncommon. This fact should be made known to concerned organizations and commands associated with the Fort. The following recommendations that were noted in Kondratieff et al. (2004) are **re-emphasized**:

Figure 1. Cross Timbers upland forest type at Fort Sill dominated by post-oak and blackjack oak.

Figure 2. Quanah Range, West Cache Creek, South Boundary Road.

1. Designate appropriate-sized patches of grasslands throughout Fort Sill that are relatively permanently protected from disturbance, especially from sustained heavy vehicle use. Thre are many potential pristine patches in the West and Quanah ranges.

2. Manage grasslands for maximum plant biodiversity by incorporating natural disturbances, such as fire and/or grazing to prevent shrubland or woodland

encroachment. Protect patches of Cross Timber upland forest type found at Fort Sill (Fig. 1).

3. Keep activities and related impacts to a minimum along river/stream corridors such as along East Cache Creek, Blue Beaver, Post Oak Creek, Rock Creek and West Cache Creek (Fig. 2) especially where there are areas of native aquatic vegetation or a native plant under story. These areas are particularly rich in a wide variety of arthropod species.

4. Many of the lakes and ponds have especially dense surrounding vegetation and during especially dry periods or drought these areas have plants with nectar flowers that support butterflies during these especially harsh periods. We recommend that vegetation be maintained to the maximum practical extent in these areas.

5. Maintain a managed database of the invertebrates for a long-term inventory. This information will be critical for future natural resource and conservation management decisions.

Table 1. List of selected taxa of Arthropods collected on Fort Sill as compared to known species recorded from Oklahoma in terms of percentage of species present at Foret Sill. Included groups were those that reliable distributional information was available. See Kondratieff et al., (2003, 2004), Opler (2005) and this report for sources.

Taxa	Fort Sill Species	Recorded Oklahoma Species	% of
Ixodidae	5	6	83%
Buthidae	1	1	100%
Ephemeroptera	22	89	25%
Odonata	68	133	51%
Acrididae	54	127	43%
Plecoptera	6	44	14%
Cicadidae	13	24	54%
Gerridae	6	15	40%
Hydrometridae	1	2	50%
Mesoveliidae	1	2	50%
Veliidae	4	11	36%
Belostomatidae	1	6	17%
Corixidae	8	22	36%
Gelastocoridae	1	1	100%
Nepidae	1	6	17%
Notonectidae	5	7	71%
Pleidae	1	1	100%
Pentatomidae	26	55	47%
Saldidae	1	9	11%
Corydalidae	2	2	100%
Sialidae	2	5	40%
Sisyridae	3	2	150%
Buprestidae	18	116	15%
Carabidae	116	300	39%
Chrysomelidae	97	321	31%
Cicindelidae	17	27	63%
Coccinellidae	13	62	21%
Dermestidae	3	26	11%
Dytiscidae	29	38	76%
Elateridae	59	80	74%
Gyrinidae	6	11	55%

Haliplidae	8	10	80%
Meloidae	23	73	32%
Cerambycidae	65	106	61%
Dryopidae	2	5	40%
Elmidae	3	26	12%
Hydrophilidae	33	55	60%
Scarabaeoidea	70	259	27%
Silphidae	6	15	40%
Asilidae	56	130	43%
Calliphoridae	6	22	27%
Culicidae	21	60	35%
Mydidae	2	3	67%
Stratiomyidae	13	35	37%
Syrphidae	25	65	38%
Tabanidae	20	64	31%
Trichoptera	59	146	40%
Hesperioidea	25	68	37%
Papilionoidea	49	114	43%
Arctiidae	24	37	65%
Notodontidae	23	17	135%
Catocala	19	59	32%
Schinia	17	41	42%
Sphingidae	16	32	50%
Saturniidae	4	13	31%
Apidae	5	12	42%
Formicidae	27	79	34%
Pompilidae	11	74	15%
Vespidae	22	89	25%
TOTAL	1,244	3260	38%

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Kondratieff, P. A. Opler, M. C. Garhart, and J. Schmidt. 2004. Survey of selected insect taxa of Fort Sill, Comanche County, Oklahoma. Dragonflies (Odonata), stoneflies (Plecoptera) and selected moths (Lepidoptera). C. P. Gillette Museum of Arthropod Diversity, Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins. 91 pages.

Opler, P. A. (editor). 2005. Survey of Selected Arthropod Taxa of Fort Sill, Comanche, Oklahoma. Part 3. Contributions of the C. P. Gillette Museum of Arthropod Diversity, Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins. 263 pp.

Samways, M. J. 1994. Insect conservation biology. Chapman and Hall, London. 358 pp.

Table 2. Specific Sampling Sites and UTM Coordinates, Fort Sill, Oklahoma, April 2006-September 2006.

Site Name	**Coordinates**
Arbuckle Hill	N 34˚ 38.603’ W 98˚ 19.460’
Bridge Over Beef Creek	N 34˚ 41.244’ W 98˚ 22.874’
BLT Power Line Rd. at Power Line to Rock Creek	N 34˚ 38.613’ W 98˚ 40.068’
BLT 14 June, 2006	N 34˚ 38.305’ W 98˚ 20.611’
Jackson Hole Pond	N 34˚ 38.370’ W 98˚ 40.397’
Pottawatomie Pond	N 34˚ 39.384’ W 98˚ 38.399’
West Cache Creek	N 34˚ 39.001’ W 98˚ 39.024’
Quanah Creek, S. Boundary Rd.	N 34˚ 40.091’ W 98˚ 39.199’
Rock Creek CDC Trap, S. Boundary Rd.	N 34˚ 28.444’ W 98˚ 39.631’
Engineer Pond	N 34˚ 42.639’ W 98˚ 34.218’
Knob Hill Rd.	N 34˚ 41.096’ W 98˚ 20.452’
Natural Resource Building	N 34˚ 41.124’ W 98˚ 24.411’
Ketch Pond	N 34˚ 43.082’ W 98˚ 27.527’
Medicine Cr., N. Boundary Rd.	N 34˚ 43.022’ W 98˚ 29.441’
Near Natural Resource Building, BLT	N 34˚ 41.271’ W 98˚ 24.351’
Trib to Rabbit Creek	N 34˚ 42.137’ W 98˚ 26.197’
Lake Elmer Thomas	N 34˚ 43.134’ W 98˚ 31.808’
Blue Beaver Creek, Mckenzie Hill Rd.	N 34˚ 39.150’ W 98˚ 33.246’
Blue Beaver Creek, Blue Beaver Valley Rd.	N 34˚ 42.007’ W 98˚ 33.938’
Pond Off Eglin Rd., East Range Fort Sill	N 34˚ 44.997’ W 98˚ 20.202’
Horn Pond	N 34˚ 41.012’ W 98˚ 16.988’
E. Cache Cr., S. Boundary Rd.	N 34˚ 38.574’ W 98˚ 21.627’
Red River, Montague County Texas	N 33˚ 52.394’ W 97˚ 56.216’
Engineer Pond	N 33˚ 42.650’ W 97˚ 34.215’
West Cache Cr. @ Quanah Creek	N 34˚ 39.003’ W 98˚ 39.027’
Jct. Deer Cyn. Rd. LETRA rd.	N 33˚ 41.974’ W 98˚ 33.934’
East Range, Nr. Holye Bridge	N 34˚ 40.239’ W 98˚ 22.395’
East Range, Nr. Geronimo Grave	N 34˚ 41.702’ W 98˚ 22.188’
Near Twin Gates, Quanah Range Fort Sill	N 34˚ 39.142’ W 98˚ 38.615’
Near Strip 15, West Range	N 34˚ 42.662’ W 98˚ 26.082’
Lake Elmer Thomas	N 34˚ 43.149’ W 98˚ 31.809
Pottawatomie Twins, Quanah Range Fort Sill	N 34˚ 39.398’ W 98˚ 38.403'
Beef Creek, East Range Fort Sill	N 34˚ 41.247’ W 98˚ 22.864’
Rock Cr., Quanah Range Fort Sill	N 34˚ 38.347’ W 98˚ 22.864’

Survey of Selected Arthropod Taxa of Fort Sill, Comanche County, Oklahoma. IV. Hexapoda: Coleoptera: Buprestidae, Chrysomelidae, Coccinellidae, Dermestidae, Elateridae, Meloidae; Diptera: Calliphoridae, Culicidae, Stratiomyidae, Syrphidae, and Tabanidae.

Introduction

An inventory of selected arthropod species, Buprestidae, Chrysomelidae, Coccinellidae, Dermestidae, Elateridae, Meloidae (Coleoptera: beetles); Calliphoridae, Culicidae, Stratiomyidae, Syrphidae, Tabanidae (Diptera: true flies) (Table 3) was made between April 2006 to September 2006.

Methods and Materials

Sampling was carried out during appropriate times from April 2006 to September 2006. General methods, applications, and rationale were taken from New (1998). Each survey was for a minimum of three days by one to two experienced collectors. A voucher series of each taxon was preserved following standard protocols as outlined by Steyskal et al. (1986), and deposited in the C.P. Gillette Museum of Arthropod Diversity, Colorado State University (all taxa except spiders) and the Denver Museum of Nature and Science (spiders). Information on the species sampled will be served on the USGS Insects and Related Arthropods web site under U.S. Army, Fort Sill. Table 2 lists the sampling sites with UTM coordinates.

For the Buprestidae, Chrysomelidae, Coccinellidae, Dermestidae, Elateridae, Meloidae, Calliphoridae, Stratiomyidae, Syrphidae, and Tabanidae were sampled using standard aerial and sweep netting, malaise trapping, ultra-violet light traps, and searching known microhabitats. A review of these methods is available in Southwood (1978).

Adult mosquitoes were trapped using CDC light traps (Hausherr's Machine Works, Toms River, New Jersey, 732-349-1319) (Fig. 3). Traps were baited with dry ice and operated from sunset to sunrise. Adult mosquitoes were killed by freezing and immediately pointed to prevent specimen damage.

Investigators consulted with the Natural Resources Office staff at Fort Sill to help select appropriate sites in each habitat that would not conflict with military training or the safety of the investigators.

Figure 3. CDC light trap (Hausherr's Machine Works, Toms River, New Jersey). The blue drink cooler was filled with dry ice during the operation of the trap, and small holes at the bottom allowed the escaped of CO_2 to be circulated by the fan of the trap.

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New, T. R. 1998. Invertebrate surveys for conservation. Oxford University, Oxford. 240 pp.

Steyskal, G. C., W. L. Murphy, and E. M. Hoover, editors. 1986. Insects and mites: Techniques for collection and preservation. U.S. Department of Agriculture, Miscellaneous Publication No. 1443, 103 pp.

Southwood, T. R. E. 1978. Ecological methods with particular reference to the study of insect populations. Second edition.Chapman and Hall, London. 524 pp.

Sources of Taxonomic Names Used

Unless otherwise indicated, the scientific names used in this report for the species of insects are from the checklist, *Nomina Insecta Nearctica* by Poole and Gentili (1996a;1996b; 1996c; 1997).

The following experts other than the authors identified or verified specimens:

Buprestidae: Dr. Charles L Bellamy, Senior Insect Biosystematist, Plant Pest Diagnostics Branch, California Dept. of Food & Agriculture, 3294 Meadowview Road, Sacramento CA 95832-1448, E-mail cbellamy@cdfa.ca.gov

Calliphoridae: Dr. Terry Whitworth, 2533 Inter Avenue, Puyallup, WA, E-mail wpctwbug@aol.com

Chrysomelidae: Dr. Shawn Clark, Brigham Young University, Monte L. Bean Life Sciences Museum, 290 MLBM, Provo, UT 84602, E-mail shawn_clark@byu.edu

Culicidae: LTJG Adam C. Strong, MSC, USN, Navy Entomology Center of Excellence, Jacksonville, FL

Dermestidae: Dr. Richard Beal, 1094 Pine County Court, Prescott, AZ 89303

Elateridae: Dr. Samuel A Wells, Innovation Team Leader, BASF Corporation, 26 Davis Drive, Research Triangle Park, NC, 27709, E-mail samuel.wells@basf.com

Meloidae: Jason Schmidt, Loveland, Colorado.

Stratiomyidae: Dr. Wilford J. Hanson, Utah State University, Department of Biology, 5305 Old Main Hill, Logan, UT 84322-5305

Syrphidae: Wouter van Steenis, Vogelmelk 4, 3621 TP Breukelen, The Netherlands E-mail w.vansteenis@andros.demon.nl

Tabanidae. Dr**.** John MacDonald, Department of Entomology, Purdue University, West Lafayette, IN 47907, E-mail macdonaj@purdue.edu

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Poole, R. W. and P. Gentili. 1996a. Nomina Insecta Nearctica: A checklist of the insects of North America. Vol. 1: Coleoptera, Strepsiptera. Entomological Information Services, Rockville, Maryland. 827 pp.

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Table 3. Synopsis of Higher Taxonomy of the Arthropoda Taxa Survey at Fort Sill, Comanche Co., Oklahoma, 2005-2006.

Hexapoda (Insects)

Order Coleoptera (Beetles)
- Suborder Polyphaga
  - Family Buprestidae (Metallic Wood Boring Beetles)
  - Family Chrysomelidae (Leaf Beetles)
  - Family Coccinellidae (Lady Beetles)
  - Family Dermestidae (Dermestid or Skin Beetles)
  - Family Elateridae (Click Beetles)
  - Family Meloidae (Blister Beetles)

Order Diptera (Flies)
- Suborder Brachycera
  - Family Calliphoridae (Blow Flies)
  - Family Culicidae (Mosquitoes)
  - Family Stratiomyidae (Soldier Flies)
  - Family Syrphidae (Syrphid or Flower Flies)
  - Tabanidae (Horse and Deer Flies)

ORDER Coleoptera (BEETLES)

BUPRESTIDAE (METALLIC WOOD BORING BEETLES)

The Buprestidae are an important family of beetles. The adults are active, often beautiful beetles, bright-colored with a metallic luster. The larvae are often called flat-headed borers due to the larvae having an expanded and flattened anterior end. The tunnels of buprestid larvae can be distinguished from those of longhorned beetles or roundheaded borers as the buprestid tunnels are more flattened in cross section. Larvae occur under bark of various tree and other woody plants. A few species may kill healthy tress, however, most species attack weakened, dead, or recently felled trees A few species breed in cones, seasoned wood, and some are leaf miners. The biology of most species is unknown. The OSU website http://entoplp.okstate.edu/museum/coleoptera/Buprestidae.htm lists 116 species from Oklahoma. During this survey we collected 18 species, representing 15% of the known Oklahoma species (Appendix B). A good taxonomic source for this family is Bright (1987).

Acmaeodera macra Horn

This species is recorded from the southwest including Oklahoma and Texas.

Acmaeodera mixta LeConte

This species (Fig. 4) is widespread over much of the U.S., and can be very common.

Figure 4. *Acmaeodera mixta* LeConte, commonly seen metallic wood borer.

Acmaeodera ornata (Fab.)

This is a common and widespread species, having been recorded from much of the U.S.

Acmaeodera pulchella (Herbst)

This species ranges from southern Alberta to Ontario, south to California, Texas and Florida. Adults were taken most frequently on *Asclepias* spp.

Acmaeodera tubulus (Fab.)

The range of this species includes Ontario south to Florida, west to Texas, Nevada, and Idaho. It is a very common species on Fort Sill. This species is known to breed in hawthorn, hickory, oak, and redbud.

Agrilaxia flavimana (Gory)

This species has been collected from Ontario, south to Texas and Florida. It breeds in oak.

Agrilus bilineatus (Weber)

This species has been recorded from Canada to Florida, west to Texas. The recorded hosts include *Quercus* and chestnut. The species is known as the twolined chestnut borer.

Agrilus impexus Horn

This species occurs from South Dakota south to Mississippi and west to Wyoming and Arizona. It has bee recorded attacking locust, but this may be incorrect.

Agrilus politus (Say)

This extremely variable species is known from most of North America. It may be a complex of sibling species. The host is primarily willow (*Salix* spp.), but it has been reared from maple.

Figure 5. *Lampetis drummondi* (Laporte and Gory) on its host plant, *Eriogonum longifolium* Nutt.

Anthaxia viridicornis Say

This species is sometimes included in the genus *Haplanthaxia*. This species ranges from Quebec to Manitoba south through eastern and Midwestern U.S. to Texas and west to Colorado. This species breeds in hickory, oak and American elm.

Brachys aerosus Melsheimer

This species is known from Quebec to Alberta, south to Texas and Arizona. Recorded hosts includes aspen, beech, linden, elm, chestnut, dogwood, maple and commonly oak.

Buprestris confluenta Say

The range of this brightly colored beetle is from British Columbia to Ontario through western U.S. south to New Mexico and Texas, and east to Illinois. The larval host is eastern cottonwood, *Populus deltoides* W. Bartram ex Marshall.

Buprestris rufipes Olivier

This beautiful species is known from much of the Midwest east to the Mid-Atlantic States. Larvae are known to attack a variety of trees, especially oak, beech, maple, and hickory.

Chrysobothris adelpha Gemminger and Harold

This species is known from the central and eastern U.S. The larval host is hickory and pecan.

Chrysobothris cribraria Mannerheim

The range of this species is interesting, known from Alberta and the Northwest Territories to Ontario and south to Florida and Texas. Supposedly, the recorded host for the larvae is *Pinus* spp.

Figure 6. *Lampetis drummondi* (Laporte and Gory.)

Chrysobothris femorata (Olivier)

This apparent species complex occurs throughout North America and into Mexico. It has been recorded as breeding in the bark and sapwood of a large variety of dead or dying fruit and forest trees. This species has been referred to the flatheaded apple tree borer.

Lampetis drummondi (Laporte and Gory)

This is a striking, large beetle with brassy-green, blue coloration (Figs. 5 and 6). It is known from Arizona to Louisiana, west to Colorado. On Fort Sill, adults were collected by the dozens in July perched on tips of Longleaf Wild Buckwheat, *Eriogonum longifolium* Nutt. during the afternoon (Fig. 5).

Taphrocerus agriloides Crotch

An eastern species, larval hosts may be sedges.

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CHRYSOMELIDAE (LEAF BEETLES)

Arnold's OSU Coleoptera Website (http://entoplp.okstate.edu/museum/coleoptera.htm) list at least 258 leaf beetle species recorded or identified from Oklahoma. Riley et al. (2003) lists 321 species of leaf beetles (Megalopodidae, Orsodacnidae, Chrysomelidae, excluding Bruchinae) for Oklahoma. During this study we collected 97 species from Fort Sill, over 30% of the Oklahoma known fauna (Appendix B). The following distribution and host range information is taken from Riley et al (2003) and Clark et al. (2004).

Donaciinae (Longhorned Leaf Beetles)

The larvae of this subfamily feed on the submerged parts of waterlilies and other aquatic plants where they breathe oxygen by tapping into plants stems and roots with stout spines that hold the larval spiracles. Adults are active and often difficult to capture.

Donacia biimpressa Melsheimer

This species ranges from Colorado to New England south to Florida. The Fort Sill specimens are a new state record for Oklahoma (Riley et al. 2003). This species is associated with Cyperaceae, but also reported from *Sagittaria*, *Sparganium*, and *Typha*.

Donacia hypoleuca Lacordaire

This species is widespread over much eastern North America and south to Texas. This longhorned leaf beetle is thought to be associated with the Nymphaeaceae.

Figure 7. *Oulema simulans* (Schaeffer)

Criocerinae (Shining Leaf Beetles)

*Oulema simulan*s (Schaeffer)

This species (Fig. 7) is known from Arkansas, Illinois, Kansas, Louisiana, Missouri, Oklahoma, and Texas. This species was collected from *Commelina erecta* L., Erect dayflower on Fort Sill. Clark et al. (2004) also lists this genus of Commelinaceae as a host.

Oulema variabilis White

This species has only been recorded from Arizona, Oklahoma, and Texas. This species has also been reported from flowers of *C. erecta.*

Cassidinae

Anisostena nigrita (Oliver)

This species is widespread throughout the eastern half of North America. The larval host plant is *Andropogon*.

Baliosus nervosus (Panzer)

This hispine species is widespread over much of eastern North America west to Utah. The common host of this beetle is *Tilia americana* L., but has also been reported from oaks, maples, and other plants.

Microrhopala excavata excavata (Olivier)

A widespread leaf-mining leaf beetle, occurring over much of the U.S. (Staines 2006), with the host being *Doellingeria umbellata* (Mill.) (Asteraceae).

Microrhopala vittata (Fab.)

This hispine has been collected over most of the U.S. Hosts include several Asteraceae including *Solidago* and *Silphium*.

Cassidini (Tortoise Beetles)

Jonthonota nigripes (Olivier)

This is a widespread and common metallic gold species, ranging from the eastern U.S. to Nevada. Larvae and adults of this species feed on various Convolvulaceae.

Chrysomelinae (Broad-bodied Leaf Beetles)

Chrysolina flavomarginata (Say

This species has not been previously reported from Oklahoma, but has been collected from surrounding states. The range of this species generally includes the western states and western Canada. This species is associated with Asteraceae with common taxa such as ragweed and snakeweed.

Calligrapha bidenticola Brown

This species ranges from the Northeast through the Midwest and Southeast to Colorado. Riley et al. (2003) does not list Oklahoma, but Dr. Arnold's Oklahoma beetle web site,

http://entoplp.okstate.edu/museum/Chrysomelidae.htm does. Hosts of adults and larvae are species of Asteraceae.

Calligrapha sp.

A single specimen from Lake Elmer Thomas area could not be determined to species.

Zygogramma disrupta (Rogers)

The geographical range of this species includes Nebraska to Texas west to Arizona. This species is associated with Asteraceae, especially *Ambrosia*. This is a common species of leaf beetle (Fig. 8) throughout Fort Sill.

Figure 8. *Zygogramma disrupta* (Rogers), a common leaf beetle on Fort Sill. Oklahoma.

Zygogramma exclamationis (Fab.)

This species is widespread over western North America and ranges as far east as Nebraska and Missouri, and south to Texas. The adults and larvae feed on sunflower, *Helianthus* spp., and is known as the sunflower beetle.

Zygogramma heterothecae Linell

The range of this species includes the southeast to Missouri to Texas and west to Arizona. The known hosts of this leaf beetle include Asteraceae, especially *Heterotheca*.

Figure 9. *Leptinotarsa decemlineata* (Say), the well-known Colorado Potato Beetle. On Fort Sill, Oklahoma, host plants included black nightshade and buffalo bur.

Zygogramma suturalis (Fab.)

This leaf beetle is widespread over much of eastern North America. Like other species in the genus, larval and adult hosts include species of Asteraceae, especially, *Ambrosia*.

Leptinotarsa decemlineata (Say)
This is the well-known Colorado potato beetle (Fig. 9), a major agricultural pest. This species occurs over most of the U.S., but is absent from the far West. The native host for the larvae and adult include *Solanum* species. On Fort Sill, adults and larvae were collected from black nightshade, *S. ptycanthum* Dunal and buffalo bur, *S. rostratum* Dunal.

Chrysomela knabi Brown

A widespread species, having been recorded from Montana to Ontario and New York south to Alabama, west to New Mexico. This species usually feeds on willow (*Salix,* Salicaceae), but has been reported from *Populus.*

Galerucinae (Skeletonizing leaf beetles)

Derospidea brevicollis (LeConte)

This species ranges from eastern Canada south to Florida west Kansas, south to Texas. This leaf beetle is associated with Rutaceae.

Distigmoptera impennata Blake

This species ranges from Maine to Alabama, west to Missouri south to Texas. The plant hosts are unknown.

Trirhabda canadensis (Kirby)

This species occurs throughout North America. Hosts are Asteraceae. Specimens on Fort Sill were collected on *Artemisia*.

Xanthogaleruca luteola (Muller)

A well-known pest of *Ulmus* spp. (Ulmaceae), the elm leaf beetle was collected in large numbers wherever the host was found on the Fort.

Ophraella americana (Fab.)

Riley et al. (2003) indicated this species as widespread over much of North America.The Fort Sill specimens represent a new state record. Larval hosts are *Solidago* (Asteraceae).

Figure 10. *Diabrotica undecimpunctata howardi* Barber, the spotted cucumber beetle or the southern corn rootworm, has been recorded to feed on more than 200 plants. This is a common species on Fort Sill, Oklahoma.

Ophraella communa LeSage

This is another widespread species over much of North America. Hosts are various Asteraceae and on Fort Sill it was associated with *Ambrosia* (ragweed).

Luperini

Diabrotica cristata (Harris)

This is a widespread species throughout the U.S. This species is associated with Poaceae, and Clark et a. (2004) list *Andropogon*, *Bromus*, and *Setaria* as hosts, grasses commonly found on Fort Sill.

Diabrotica undecimpunctata howardi Barber

Known as the spotted cucumber beetle or the southern corn rootworm (Fig. 10), it occurs throughout U.S.and has been recorded to feed on more than 200 other plants, including many crop plants. This is a common species on Fort Sill.

Diabrotica tibialis Jacoby.

This species is currently recorded only from Texas and Mexico into Central America (Riley et al. 2003). The single specimen collected from near Blue Beaver Creek represents a new state record for Oklahoma. The host is probably frostweed, *Verbesina* (Asteraceae).

Luperosoma parallelum (Horn)

This species is only known from Kansas, Missouri, Oklahoma, South Dakota, and Texas. *Luperosoma parallelum* was collected from silver-leaf scurf pea, *Psoralea argophylla* Pursh.

Phyllecthris gentilis LeConte

This species is widespread throughout the eastern half of the U.S. The hosts for this leaf beetle include several Fabaceae, including black locust, *Robinia pseudoacacia* L.

Metrioidea blakeae (Wilcox)

This species is currently only recorded from Texas. The Fort Sill specimens represent a new state record. Clark et al. (2004) indicates that this species has been found on *Opuntia* and species of Malvaceae and Ranunculaceae.

Metrioidea brunnea (Crotch)

This species is known from the Southeast to Texas, Oklahoma, and Kansas. Apparently, this species is associated with various Asteraceae.

Metrioidea popenoei (Blake)

This species is known from Arizona, Kansas, Missouri, New Mexico, Oklahoma, South Dakota, and Texas. Little is known about the host of this species, It may feed on Asteraceae.

Alticini (Flea beetles)

Blepharida rhois (Forster)

This species occurs over much of North America, adults and larvae are often associated with with Anacardiaceae, especially from *Rhus* spp.

Phyllotreta pusilla Horn

This species has a western North American distribution but ranges into Missouri south to Texas. It has been recorded feeding on many different species of plants, preferring Brassicaceae, Capparaceae, and Tropaeolaceae.

Phyllotreta sp.

Species in this genus are difficult to determine, and no species identification was possible with this material.

Longitarsus sp.

Identification of species of this genus is difficult, and Dr. S. Clark could not determine specimens collected from Fort Sill.

Systena dimorpha Blake

This species is known from western Canada to South Dakota, south to Kansas, west to California. The Fort Sill specimens represent a new state record. This species was found feeding on cocklebur *Xanthium strumarium* L. (Asteraceae) on Fort Sill.

Systena frontalis (Fab.)

This species is widely distributed throughout the Southeast and Midwest and west to Montana. This flea beetle has been recorded feeding on a wide variety of hosts (Clark et al. 2004).

Figure 11. Adults and larvae of the flea beetle, *Altica foliaceae* (LeConte) defoliating *Oenothera*.

Systena hudsonias (Forster)

Another widespread flea beetle recorded from most of the eastern half of the U.S. This species is known to attack pigweed, *Amaranthus* (Amaranthaceae), various species of Asteraceae and other plants.

Altica foliaceae (LeConte)

The Apple Flea Beetle (Fig. 11) is known from the Midwest and several western states. Clark et al. (2004) list numerous different plant hosts for this beetle. It was collected on Fort Sill from various *Oenothera* spp (Onagraceae, evening primrose). This is a common species on Fort Sill.

Altica spp.

Several additional species of this genus occur on Fort Sill, but the taxonomy is difficult, and specific names could not be applied.

Lysathia ludoviciana (Fall)

This species is known from Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas. The two specimens from Fort Sill represent a state record for Oklahoma. This species feeds on *Myriophyllum* (Haloragaceae) and *Ludwigia* (Onagraceae).

Chaetocnema denticulata (Illiger)

This species occurs throughout the U.S. This flea beetle is associated with several genera of Poaceae. This species is known as the toothed flea beetle.

Chaetocnema pulicaria Melsheimer

This species also occurs over most of the U.S. *Chaetocnema pulicaria*, the corn flea beetle is a well-known species and a major pest of corn. It also attacks others species of Poaceae.

Disonycha admirabila Blatchley

This is a species known from the midwestern and southeastern U.S. This species has been collected from several Poaceae and also *Polygonum* (Polygonaceae), the plant it was collected from on Fort Sill.

Asphaera lustrans (Crotch)

This species (Fig. 12) is known from the southern U.S. west to New Mexico, south into Mexico. Clark et al. (2004) indicates that this beautiful flea beetle is associated with *Scutellaria* (Lamiaceae). On Fort Sill this species was found feeding on *S. wrightii* Gray.

Figure 12. *Asphaera lustrans* (Crotch), a strikingly marked flea beetle occurring on Fort Sill, Oklahoma.

Omophoita cyanipennis octomaculata (Crotch)

This beautiful flea beetle was previously recorded from Arizona, Florida, Kansas, Texas, and Mexico. The Fort Sill specimens represent a new state record. This species has been collected from a variety of plant families (Clark et al. 2004).

Capraita sexmaculata (Illiger)

A geographically widespread species, occurring over much of eastern U.S. Apparently, it feeds on species of Oleaceae, including *Fraxinus* (ash) species.

Eumolpinae (Oval Leaf Beetles)

Metachroma laevicolle Crotch

The Fort Sill specimens represent a new state record. Previously, this species was known from the southeastern and midwestern U.S. This species has been reported from species of oak (*Quercus*, Fagaceae).

Paria fragariae Wilcox

The nominate form is known from the Midwest and Northeast U.S. Clark et al. (2004) indicates that various Rosaceae are hosts.

Paria quadriguttata LeConte

This species is widespread over much of North America. The preferred hosts are species of *Salix* (Salicaceae).

Paria thoracica (Melsheimer)

Another species that is widespread over the U.S. Reported hosts are various species of Asteraceae.

Colaspis crinicornis chittendeni Blake

This subspecies was previously recorded only from Louisiana. The Fort Sill material represents a new state record. This species has been reported from soybean, sugarcane and corn.

Colaspis sp.

Taxonomically this genus is difficult to determine to species. At least two additional species of this genus occur on Fort Sill.

Rhabdopterus sp.

A single specimen was collected from the West Range, but could not be determined. This specimen may respresent *R. picipes* (Olivier).

Spintherophyta globosa (Olivier)

A widespread leaf beetle throughout the eastern half of the U.S., but has been reported as far west as Colorado. This species is reported to feed on Caprifoliaceae, Asteraceae, and other families.

Chrysochus auratus (Fab.)

This species (Fig. 13) has been recorded from much of the U.S and Canada. Common hosts are species of *Apocynum* (Apocynaceae).

Figure 13. *Chrysochus auratus*, known as the dogbane leaf beetle.

Graphops undescribed species

Eighteen species are currently recognized in this genus from North America. Dr. Shawn Clark has determined this single specimen collected from Engineer Pond area as undescribed.

Graphops sp.

Three specimens could not be determined to species, and however, probably represent described species. Several species are associated with plants in family Onagraceae.

Xanthonia villosula (Melsheimer)

A widespread species recorded from much of the eastern U.S as far west as Colorado. This species has been reported from several families of plants including Aceraceae, Betulaceae, and Fabaceae. On Fort Sill, this species was collected from oak.

Xanthonia sp.

A specimen collected on the West Range could not be identified.

Xonthonia undescribed species

A single specimen determined by Dr. Shawn Clark as an undescribed species was collected from the Blue Beaver Creek area.

Myochrous denticollis (Say)

This species is known from most midwestern states, as far east as Virginia, and as far as south as Texas. This species has been recorded as a pest of corn, but attacks a wide variety of plants species (Clark et al. 2004).

Cryptocephalinae

Pachybrachis atomarius (Melsheimer)

This species is a widespread eastern U.S species. It has been reported from *Rhus* (Anacardiaceae) and other plants.

Pachybrachis bivittatus (Say)

Recorded from most states including California to New Hampshire and south to Texas. This species feeds on *Salix* (Salicaceae). It is common on Fort Sill on its host.

Pachybrachis confusus Bowditch

The two specimens collected on Fort sill represent a new state record for Oklahoma. Previously this species was recorded from` Alabama, Georgia, Indiana, Louisiana, Mississippi, North Carolina, Ohio, Pennsylvania, South Carolina, and Virginia. The plant host of this species is not known.

Pachybrachis diversus Fall

This species has been recorded from Florida, Iowa, Illinois, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota, and Texas. Adults are associated with Asteraceae and Salicaceae.

Pachybrachis haematodes Suffrian

This species is known from Arizona, Colorado, New Mexico, Oklahoma, South Dakota, Texas, and Mexico. Specimens collected on Fort Sill were swept from *Quercus* (Fagaceae).

Pachybrachis impurus Suffrian

This species has been recorded from Iowa, Illinois, Kansas, Missouri, Nebraska, Pennsylvania, and Texas. Very little host information is available. In Missouri, beetles were associated with persimmon (*Diospyros*: Ebenaceae).

Pachybrachis luridus (Fab.)

This species is widespread and common over much of eastern North America; it ranges as far west as Arizona. This species is associated with indigo, *Baptisia* (Fabaceae).

Pachybrachis nigricornis autolycus Fall

This species has been collected from tickclover, *Desmodium* (Fabaceae). On Fort Sill it was collected from *D. glutinosum* (Muhl. Ex. Willd.). There are several additional tickclover species found on Fort Sill (Johnson et al. 1990).

Pachybrachis othonus pallidipennis Suffrian

This species ranges from western Canada to North Dakota, south to Texas. The nominate form has been recorded feeding on a wide variety of plants including *Carex* (Cyperaceae), various Fabaceae, and even *Quercus* (Fagaceae).

Pachybrachis othonus sioux Balsbaugh

This species has a similar distribution to that of the previous form, but ranges apparently as far west as Arizona. As above the nominate form has been recorded feeding on a wide variety of plants including *Carex* (Cyperaceae), various Fabaceae and even *Quercus* (Fagaceae).

Pachybrachis parvinotatus Fall

This species was previously known from Colorado, Kansas, and South Dakota. The four specimens collected from Fort sill represent a new state record. Nothing is known about the host plants of this leaf beetle.

Pachybrachis spumarius Suffrian

This species is a widespread species known from many eastern U.S. states. This species has been recorded from *Rhus* (Anacardiaceae) and several other families of plants.

Pachybrachis vau imperfectus Fall

This new Oklahoma state record was collected on the East Range of Fort Sill. Previously, this form was known from only Kansas and Texas.The nominate form is known to feed on various Asteraceae.

Pachybrachis virgatus LeConte

This species is currently known from Colorado, Kansas, Missouri, Nebraska, South Dakota, and Texas. The only host noted for this species is *Polygonum* (Polygonaceae).

Pachybrachis spp.

At least three or four other species occur on Fort Sill. However, this genus needs to be revised to clarify the taxonomy of numerous species.

Cryptocephalus calidus Suffrian

This is a widespread species, known from most states of the eastern U.S. This species is primarily associated with Fabaceae.

Cryptocephalus guttulatus Olivier

This is another widespread species, known to occur over most of the eastern U.S., and is associated with various Fabaceae.

Cryptocephalus leucomelas leucomelas Suffrian

This subspecies ranges from Arizona to New Jersey south to Florida west to Texas. This is one of more common species of *Cryptocephalus* and is associated with Salicaceae (*Salix*).

Cryptocephalus mutabilis Melsheimer

This is a widespread species, known from most states of the eastern U.S. This species has been reported from several plant families including Betulaceae, Caprifolaceae, Ericaceae, Fabaceae and Fagaceae.

Cryptocephalus notatus Fab.

This species has been collected from most eastern states, but occurs as far west as Utah. This leaf beetle has been reported from *Rhus* (Anacardiaceae), various species of Asteraceae, and many other plants.

Cryptocephalus quadruplex Newman

This species is widespread over most of eastern North America. The recorded hosts include the families Anacardiaceae, Cornaceae, Ericaceae, and Fagaceae.

Cryptocephalus venustus Fab.

This is another widespread species known from western Canada to the east Coast west to Texas. This species has been recorded from ragweed, *Ambrosia* (Asteraceae), the plant that this species was collected on at Fort Sill.

Bassareus clatharatus (Melsheimer)

Little host information is known for this species, it has been recorded from alder, cotton, and willow. This species is known from South Dakota to Virginia, west to Texas. The Fort Sill specimens represent a new state record.

Bassareus lituratus (Fab.)

This species is widespread throughout the eastern U.S. A broad range of host plants for this species has been reported (Clark et al. 2004), including Fabaceae, Fagaceae, and Juglandaceae.

Bassareus mammifer Newman

This is a common species that occurs over most of the eastern U.S. This species also has been reported from a wide range of hosts, including Anacardiaceae, Betulaceae, Fabaceae, and Juglandaceae.

Diachus auratus (Fab.)

This species ranges over most of eastern North America but as far west as California. This leaf beetle attacks Apiaceae and several different Asteraceae.

Clytrini

Anomoea flavokansiensis Moldenke

This species is known from Arkansas, Illinois, Indiana, Kansas, Kentucky, Missouri, Ohio, Oklahoma, and Texas. A common species on Fort Sill, it is associated with various Fabaceae. Several specimens were collected from honey locust, *Gleditsia triacanthos* L.

Anomoea laticlavia (Forster)

This species (Fig. 14) is widespread over the eastern U.S., but ranges as far west as Wyoming. This species is also associated with Fabaceae.

Figure 14. *Anomoea laticlavia* (Forester), a common leaf beetle on Fort Sill, Oklahoma.

Coleothorpa axillaris (LeConte)

This species ranges from Arizona to Montana south to Texas and Mexico. It has been associated with plants in the families Anacardiaceae, Asteraceae, Fabaceae and others.

Coleothorpa dominicana franciscana (LeConte)

This species is widespread from Nevada to Massachusetts south to Florida, west to New Mexico. This leaf beetle is recorded from a wide variety of hosts including plants in the families Anacardiaceae, Polygonaceae, Fabaceae, Fagaceae, and others.

Coscinoptera aeneipennis (LeConte)

This species is known from California to Kansas south to Texas. This species has been associated with *Acacia*, *Lotus*, *Prosopis* (Fabaceae) and *Eriogonum* (Polygonaceae).

Saxinis knausi Schaeffer

This species is known from Arizona, Colorado, Kansas, Missouri, Nebraska, New Mexico, and Texas according to Riley et al. (2003), but is listed for Oklahoma (http://entoplp.okstate.edu/museum/Chrysomelidae.htm). This species was swept from Illinois bundleflower, *Desmanthus illinoensis* (Muhl. Ex Willd.) A. Wood (Fabaceae) on Fort Sill. Clark et al. (2004) also found this species feeding on this plant in Texas.

Saxinis omogera Lacordaire

This species is widespread over much of the eastern U.S. It is known to feed on Fabaceae, Fagaceae, and others.

Chlamisini (Warty Leaf Beetles)

Exema canadensis Pierce

This species occurs over much of the eastern U.S. to the Mississippi River. This species is associated with Asteraceae, recorded especially from goldenrod, *Solidago.*

Exema dispar Lacordaire

This is another widespread species occurring over much of the eastern U.S. This species is also closely associated with Asteraceae.

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COCCINELLIDAE (LADY BEETLES)

Lady beetles are also known as ladybugs and ladybird beetles**.** The adults are oval in shape, range in length from about 1 mm to about 10 mm depending upon the species. Most lady beetles are brightly colored, usually red. This is a warning signal to tell the predator that the ladybirds are distasteful and toxic. However, many species are small black beetles. When disturbed some ladybirds may emit a strong smelling yellow liquid as a deterrent against predators. Most lady beetle adults and larvae are predators, and are important biological control agents of agricultural pests. Both stages feed on small insects such as aphids, scale insects, and mites. Both adults and larvae may be found on the same plants feeding on the same species of prey. They may consume flower nectar, water and honeydew from aphids as supplements. However, a few of them are plant feeders and major agricultural pests. The well-known Mexican Bean Beetle, *Epilachna varivestris* Mulsant is not listed for Oklahoma. However, *E. borealis* (Fab.), the squash beetle is listed (http://entoplp.okstate.edu/museum/coleoptera/Coccinellidae.htm), but was not collected during this survey. This website records 62 species of lady beetles from Oklahoma. During this study 13 species were collected (Appendix B). Three of the species listed below are exotics, purposefully introduced from the Old World as biocontrol agents (Gordon and Vandenberg 1991). Gordon (1985) presents a thorough review of this family, and the information below is summarized from this source.

Chilocorus stigma (Say)

This species ranges from Nova Scotia to Florida, west to Alberta and Arizona. This genus is known to attack scale insects, but also aphids.

Coccinella transversoguttata richardsoni Brown

This species is common and widespread, known from Labrador to Virginia west to Alaska and California. Members of this genus are primarily aphid predators.

Figure 15. *Coccinella septempunctata* L, is known commonly as the C-7 lady beetle. It is common on Fort Sill, Oklahoma.

Coccinella septempunctata L.

This beetle (Fig. 15) is known as the C-7 lady beetle. It was introduced from Eurasia, released in North America between 1956-1971 (Gordon and Vandenberg 1991), and has become an abundant species throughout much the U.S.

Coleomegilla maculata lengi Timberlake

This species is considered an aphid predator, but will feed on pollen and eggs of insects. The pink lady beetle ranges from Ontario to Georgia, west to Minnesota south to Texas.

Cycloneda sanguinea L.

This species ranges from North Carolina to Florida west to southern California. This genus is known to attack aphids.

Harmonia axyridis (Pallas)

The multicolored Asian lady beetle was introduced in the mid 1970's as a biological control agent that has spread over much of the U.S. Unlike other ladybugs this species can be a major nuisance to homeowners because of its habit of invading houses and buildings in large numbers while searching for protected sites to overwinter in the fall (mid-October to early November) and appearing again on warm, sunny days in February and March. The multicolored Asian lady beetle preys upon many species of aphids, scale insects, and psyllids.

Hippodamia convergens (Guerin-Meneville)

The convergent lady beetle is one of the most common species in North America known from most states. Members of the genus are primarily aphid predators.

Hippodamia glacialis (Fab.)

This species ranges from Quebec to South Carolina and Alabama, west to Saskatchewan and Colorado.

Figure 16. *Olla v-nigrum* (Mulsant), a variable and common species on Fort Sill, Oklahoma.

Hippodamia variegata (Goeze)

Adults are known as H-V or the white collared lady beetle and was introduced to North America many times between 1957 and 1981 and more recently for Russian Wheat Aphid control from Eurasia.

Hyperaspis fimbriolata Melsheimer

This species ranges from New York to Florida, west to Oklahoma. Members of this genus attack scale insects and aphids.

Hyperaspis undulata (Say)

This species is widespread from Alberta to Oregon east to Massachusetts south to Louisiana north to North Dakota.

Olla v-nigrum (Mulsant)

A remarkably variable species (Fig. 16), with two basic color forms, one black with yellow spots and the other pale colored with black spots. This species ranges from southeastern Canada to Florida, west to southern British Columbia and southern California. This species is an aphid predator.

Psyllobora renifer Casey

This small species of Coccinellidae is known from Louisana to California. This genus is known to feed on fungi, especially the mildew types.

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DERMESTIDAE (DERMESTID OR SKIN BEETLES)

Figure 17. *Dermestes caninus* Gemar on an animal carcass on Fort Sill, Oklahoma.

These beetles are primary scavengers feeding on dried skin and other remains of animals, such as fur, feathers, wool, leather, and hides. Many smaller species are well-known pests of carpets, silk, dried meats, stuffed animals, and even dried insect collections. Genera such as *Anthrenus*, *Attagenus*, and *Trogoderma* are commonly found in homes. The Khapra Beetle, *T. granarium* Everts, an exotic pest of stored grain, when found, is subject to great efforts of eradication by the USDA. The detection of this beetle is a high priority, especially when products and other material is brought in from abroad. Taxidermists who clean skeletons for display often use various species of *Dermestes*. Twenty-six species of dermestids have been recorded from Oklahoma (http://entoplp.okstate.edu/museum/coleoptera/Dermestidae.htm). Three species were collected during this survey (Appendix B), two species of *Dermestes* were associated with decaying animal carcasses and liver baits. Beal (2003) reviews the family for North America.

Anthrenus verbasci (L.)

A cosmopolitan species, known as the varied carpet beetle, is considered a pest of a wide variety of dried stored products of animal origin.

Dermestes caninus Gemar

This species (Fig. 17) is widespread over most of the U.S. except Idaho, Oregon, and Washington.

Dermestes marmoratus Say

This species is known from the western U.S. to Kansas, and south to Texas.

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ELATERIDAE (CLICK BEETLES)

Click beetles or Elateridae are distinctively shaped, parallel-sided beetles (Figs. 18 and 19), with the posterior corners of the pronotum prlonged backward into sharp points or spines. Larvae are known as "wireworms," and are usually slender, hard-bodied, and shiny golden brown larvae. The larvae of many species are destructive, feeding in the soil on roots of many cultivated crops, especially corn and potaoes. Some larvae are well-known inhabitants of decaying wood, and usually are predacecous.

Figure-18. *Neotrichophorus texanus* (LeConte), a common click beetle found on Fort Sill, Oklahoma.

During this survey 59 species (Appendix B) or 74% of the click beetles recorded from Oklahoma were collected. The OSU website http://entoplp.okstate.edu/museum/coleoptera/Elateridae.htm listed 80 species from Oklahoma, combining the Cebrionidae. The common species included: *Conoderus lividus* (DeGeer), *C. vespertinus* (Fab.), *Hemicrepidius memnonius* (Herbst), *Melanotus communis* (Gyllenhal), *M. ignobilis* Melsheimer, *Neotrichophorus texanus* (LeConte), *Orthostethus infuscatus* (Germar), and *Paradonus pectoralis* (Say). The seventeen new state records included: *Aeolus trilineatus* Candeze, *Agriotes insanus* Candeze, *Ampedus fuscatus* (Melsheimer), *Anchastus rufus* Candeze, *Esthesopus praeditus* Horn, *Glyphonyx ferruginosus* Schaeffer, *G. helix* Smith and Balsbaugh, *Megapenthes angularis* LeConte, *M. insignis* (LeConte), *Melanotus decumanus* (Erichson), *M. emissus* (LeConte), *M. hyslopi* Van Zwaluwenberg, *M. opacicollis* LeConte, *M. testaceus* (Melsheimer), *M. trapezoideus* (LeConte), *M. verberans* (LeConte), and *Neotrichophorus carolinensis* Shaeffer.

Figure-19. The Eyed Elater, *Alaus oculatus* (L.), a large, distinctive species of click beetle on Fort Sill. The larvae develop in decaying logs where they feed on other insects.

MELOIDAE (BLISTER BEETLES)

Currently, in North America, the family Meloidae or blister beetles include at least 316 species belonging to 22 genera. The OSU web site http://entoplp.okstate.edu/museum/coleoptera/Meloidae.htm records 73 species known to occur in Oklahoma. During this survey, 23 species were collected (Appendix B) or 32% of the reported Oklahoma species. Five species, *Epicauta brunnea* Werner, *E. mimetica* (Horn), *Nemognatha piazata bicolor* LeConte, *N. sparsa* LeConte, and *Pyrota lineata texana* Dillon apparently represent new state records for Oklahoma.

Adult blister beetles feed on a wide variety of plants, grasses and some trees, largely preferring the families Asteraceae/Compositae, Leguminosae, and Solanaceae. The larvae of this family undergo hypermetamorphosis, with the unique development (MacSwain 1956, Selander and Weddle 1969). The first instar larvae, or triangulin, are usually highly sclerotized, active and search out their preferred hosts, additionally, larvae of the genus *Meloe*, Nemognathinae and Tetraonycinae are phoretic and attach to adult solitary bees to be taken back to the nest. Instars two to five are grub like and are inactive and feed. Instar six, a mostly diapausing form, does not feed and the legs are largely vestigial. Instar seven is similar in appearance to the feeding grubs and pupation soon follows. Larvae of *Epicauta* feed on the eggs of grasshoppers, mainly *Melanoplus* species, with a few species of *Epicauta* thought to be predators of other meloid eggs. Larvae of all other genera are thought to feed on the cell provisions and larvae of bees, largely preferring Apidae (=Anthophoridae) and Megachilidae, or have unknown hosts. When threatened, adult meloids will secrete clear droplets of the chemical cantharidin mixed with hemolymph through leg joints. The larvae are also capable of exuding a milky cantharidin substance from their mouths. Cantharidin is a potent terpenoid toxin found primarily, but not exclusively, in meloids. Throughout history, cantharidin has had medical and economic significance with its well-documented use as an aphrodisiac and reputation for killing domestic animals that consume hay infested with meloids. After it was determined that the harvesting technique may be responsible for the blister beetle contaminated feed, new cultivation methods have been recommended.

The following information has been taken from Enns (1956) and Pinto (1991).

Epicauta albida (Say)

This species occurs in Mexico and in the U. S. largely distributed throughout the Great Plains from Colorado, Nebraska and Kansas south to Texas and west to Arizona.

Epicauta atrata (Fabricius)

This blister beetle occurs from southern Manitoba to Maine south to Georgia and northwestern Florida, west to Texas and Montana. The distinctive red head and black body distinguishes this species.

Epicauta brunnea Werner

This species was previously known from western Texas to Arizona. The Fort Sill material represents a new state record for Oklahoma.

Epicauta callosa LeConte

This species is known from Mexico to the Great Plains from Montana south to Louisiana, west to Arizona.

Epicauta conferta Say

This remarkable short-winged species with orange abdominal segments can be seen crossing the roads of Fort Sill throughout the summer. This species occurs throughout the Midwest.

Epicauta fabricii (LeConte)

A common species known from south central province of Manitoba, and from Maine south to Virginia south and east Arizona, north to Utah, Montana and North Dakota.

Epicauta ferruginea (Say)

This very common species ranges from Alberta, Manitoba and Saskatchewan to Montana east to North Dakota, primarily following the Great Plains south to Texas and west to Arizona. The species is also known in Nevada.

Figure 20. *Epicauta immaculata* (Say.)

Epicauta funebris Horn

This species occurs throughout the eastern states from New Hampshire south to central Florida, west to Texas north to South Dakota and Minnesota.

Epicauta immaculata (Say)

This species (Fig. 20) occurs in Mexico and from West Virginia and Ohio, south to Georgia; west to South Dakota and New Mexico.

Epicauta mimetica (Horn)

This species was previously known only from Texas. The Fort Sill specimens represent a new state record for Oklahoma.

Figure 21. *Epicauta nigritarsus* (LeConte).

Epicauta murina (LeConte)

This species has been recorded from New Brunswick to Maine and Massachusetts west to Minnesota, Wisconsin, Michigan, and Montana south to Colorado.

Epicauta nigritarsus (LeConte)

This species (Fig. 21) is known from eastern Arizona to southwestern Oklahoma south to Texas and Mexico.

Epicauta occidentalis Werner

This species is a well-known pest, and adults have been recorded feeding on many crops including sugar beet, soy, cotton, alfalfa, tomato, and potato. *Epicauta occidentalis* has been shown to be one of the most toxic species, highest in cantharidin. It is commonly associated with alfalfa and was the predominate species responsible for the lethal poisoning of livestock, mainly horses, before new cultivating techniques eliminated this problem. This species is found throughout the Southwest from Arizona east to Texas north to Colorado, Kansas, and Nebraska.

Epicauta pensylvanica (DeGeer)

This very common species on Fort Sill ranges, from southern Alberta east to southern New Brunswick to Idaho south to Arizona east to Maine and Florida.

Figure 22. *Epicauta sericans* LeConte

Epicauta sericans LeConte

This species (Fig. 22) ranges from western Canada to Kentucky south to Alabama west to Arizona and Mexico, north to Montana.

Nemognatha lurida lurida LeConte

This species is widespread throughout the central and western United States, from Washington east to eastern Missouri south to southern California and Louisiana. Larvae attack Apidae and Megachilidae bees.

Nemognatha piazata bicolor LeConte

Nemognatha p. bicolor ranges from Idaho east to Iowa south to Arizona and eastern Texas. The Fort Sill records represent a new state record. Larvae of this species have been associated with *Anthophora* bees.

Nemognatha sparsa LeConte

This species ranges from western Wyoming east to eastern South Dakota south to northern Arizona and New Mexico. The Fort Sill specimens represent another new state record for Oklahoma.

Figure 23. A *Pyrota* species with typical black and yellow markings.

Pyrota concinna Casey

In the U.S. this species is known from southeastern Wyoming and Nebraska south and east to Arkansas and south Texas west to Utah and southern Nevada. The yellow and black adults (Fig. 23) were found on Curly-top gumweed (*Grindelia squarrosa* (Pursh) Dunal) and sunflower (*Helianthus* sp.).

Pyrota deceptiva Selander

This species is distributed from Mexico and Texas to central Oklahoma.

Pyrota perversa Dillon

This species is known from southeastern Nebraska south throughout Kansas and Oklahoma to panhandle of Texas east to the Rio Grande. All adults were found on Curly-top gumweed (*G. squarrosa*).

Pyrota lineata texana Dillon

Previously, this species was known only from Texas. The Fort Sill specimens represent a new state record for Oklahoma.

Zonitis sayi Wickham

In North American this beautiful species is known from Alberta east to Manitoba to Idaho east to Wisconsin south to Arizona, eastern Kansas and southwestern Texas.

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ORDER DIPTERA (Flies)

CALLIPHORIDAE (BLOW FLIES)

Flies of the family Calliphoridae often have shiny, green or blue metallic coloration, often known as green bottle flies or blue bottle flies. However, the more regularly used common name for members of this family is blowfly, a name that arose because when their larvae (termed maggots) infest meat they render it "flyblown" making it unfit to eat. Feeding activity by the maggots causes putrefaction, resulting in the production of gases that give the meat a blown up appearance. Larvae of this family include major decomposers of organic material, however, some are obligatory or facultative parasites on humans or on domestic animals. Well-known species attacking humans include the African Congo Floor Maggot and the Tumbu Fly. Some larvae, of the genus *Protocalliphora* feed on the blood of nesting birds, others of the genus *Lucilia* are considered internal parasites of frogs and toads. The breeding places of most species are carrion (Fig. 24) and garbage. Adults are a nuisance when entering buildings. One genus, *Pollenia*, larvae of which are earthworm parasites, often enter buildings in large numbers in the fall and early winter. They are given the common name cluster flies for their habit of "clustering" together in buildings.

Figure 24. Females of *Cochliomyia macellaria* (Fab.) laying eggs on an animal carcass on Fort Sill, Oklahoma.

Figure 25. A species of *Calliphora* resting on Fort Sill, Oklahoma.

This is the family that forensic entomologists utilize to "age" a corpse, based on the developmental stage of the maggot, with a knowledge of effect of temperature on growth, an estimate on how long the corpse has been exposed in the environment in hours can be derived (Greenberg and Kunich 2002).

The larvae of some species that breed in carrion, for example *Lucilia sericata* (Meigen) and *Phormia regina* (Meigen), when reared under aseptic conditions, have been used in the treatment of diseases such as osteomyelitis in humans.

At Fort Sill both *Cochliomyia macellaria* (Fab.) and *Lucilia coeruleivirdis* Macquart are commonly observed around dumpsters, and even the animal pens at Natural Resources. Any animal carcasses along roadsides are attractive to these flies, but usually the ample numbers of vertebrate scavengers remove them before much fly activity. Whitworth (2006) provides an excellent review of the North American species. Of the approximately 22 species that occur in Oklahoma, six species were collected on Fort Sill during this survey (Appendix B).

Calliphora coloradensis Hough

Whitworth (2006) considered this species (Fig. 25) as rare, being reported from Mexcio north to Alaska, and east to Ontario and Indiana. The Fort Sill specimen represents a new state record.

Figure 26. Females of *Cochliomyia macellaria* (Fab.) laying eggs on an animal carcass on Fort Sill, Oklahoma

Cochliomyia macellaria (Fab.)

The secondary screwworm (Fig. 26) ranges from the southern U.S. to southern Canada. This species is essentially a scavenger. Cases of myiasis in man and animals caused by this species have been reported (James 1947). The famous primary screwworm, *C. hominivorax* (Coquerel), formerly occurring in Oklahoma, was a devastating pest of livestock, has been eliminated by 1966 from the U.S. by the sterile male technique. *Cochliomyia macellaria* is a very common species on Fort Sill.

Lucilia coeruleiviridis Macquart

This brilliant blue-green fly is common throughout the eastern U.S. This species is very common throughout Fort Sill, and is attracted to all types of decaying organic material.

Figure 27. *Phormia regina* (Meigen), the Black Blowfly.

Lucilia cuprina (Wiedemann)

This species has been reported as being uncommon and ranging from Virginia west through Missouri to California.

Lucilia mexicana Macquart

This species is primarily a southwestern U. S. species, but ranges into South America.

Phormia regina (Meigen)

The Black Blowfly (Fig. 27) occurs throughout Eurasia and most of North America. It also occurs in Hawaii. In southwestern Oklahoma this species is usually common only in the spring, and all Fort Sill specimens were collected in April.

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CULICIDAE (MOSQUITOES)

Figure 28. CDC light trap (Hausherr's Machine Works, Toms River, New Jersey) being checked in the morning.

The Culicidae or the mosquitoes are considered the most important group of arthropods of medical and veterinary importance (Eldridge 2005). There are more than 3,500 species of mosquitoes in the world, transmitting disease pathogens that cause the diseases malaria, yellow fever, dengue, and encephalitis. It is estimated that potentially half of the world's human population may be infected with mosquito-borne diseases. Additionally, these flies are major pests of livestock and other domesticated animals. Recently, in the United States, West Nile Virus, a mosquito-borne flavivirus, has become a major human health issue (Campbell et al. 2002).

Rozeboom (1942) provided a review of the mosquitoes of Oklahoma recording 40 species at that time for Oklahoma. Griffith (1952) added eleven additional species to the state list. In the most recent comprehensive treatment of the 174 species and subspecies of mosquitoes occurring in the conterminous 48 states and Alaska and Canada, Darsie and Ward (2005) listed at least 60 species and subspecies from Oklahoma. During this study 21 species of mosquitoes were collected (Appendix B), representing 35% of the known Oklahoma species. Of these only 4-6 can be considered nuisance pests. The most abundant mosquito species was *Culex erraticus* Dyar and Knab. In August 2006 in one CDC mosquito trap (Fig. 28) over 500 individuals of this species were collected near Medicine Creek.

The website http://www.ento.okstate.edu/mosquito/mosquito.html provided a useful overview of mosquito pest management for Oklahoma.

The mosquitoes of Fort Sill may be classified based on larval habitat, the floodwater mosquitoes, permanent water mosquitoes, and container mosquitoes. The floodwater mosquitoes include the genera *Aedes*, *Ochlerotatu*s, and *Psorophora* (Appendix B). Species in these genera typically bite

humans and livestock. Typically, species in these genera can reach large populations in spring and early summer. Eggs are laid on the soil surface at the edge of receding pools after heavy rains or floods. Eggs hatch after reflooding. Most floodwater mosquitoes in Oklahoma, the eggs (Fig. 29) are the overwintering stage (Rozeboom 1942). Adults often die quickly during hot weather. Biting activity by females generally is around sunset or in shady areas when disturbed.

The permanent water mosquitoes include the genera *Anopheles, Coquillettida,* and some *Culex* species (Appendix B). Larvae are generally found in quiet bodies of water with sunlight and much surface vegetation. Female *Anopheles* mosquitoes lay eggs singly on the waters surface, whereas the genera *Culex* and *Coquillettidia* lay eggs as rafts (Fig. 30).

Larvae of the container mosquitoes typically occur in treeholes and rock pools. However, now these species have adapted to man-made containers such as tires, cans, birdbaths, gutters, discarded cans and other containers. Larvae of *Culex restuans* Theobald were collected in discarded ammo boxes near Lake Elmer Thomas. *Ochlerotatus triseriatus* (Say) is another common and widespread treehole and artificial container species on Fort Sill. An important disease vectoring species of this group, the Asian Tiger Mosquito, *Aedes albopictus* (Skuse), was not collected during this study.

Figure 29. *Aedes albopictus eggs.*

Adult mosquitoes occur on Fort Sill seasonally from March through first frost in November. A few early species prefer cool weather, but the majority of adult mosquitoes are pests during May through August. Populations increase rapidly following spring rains. Larvae of *Psorophora* can be collected in small rain filled pools in April throughout the Fort. The majority of the species, however, are summer species usually appearing first in June. Scattered rains may lead to higher populations of mosquitoes in certain areas and an absence in others. During hot, dry summers mosquito adults become less abundant.

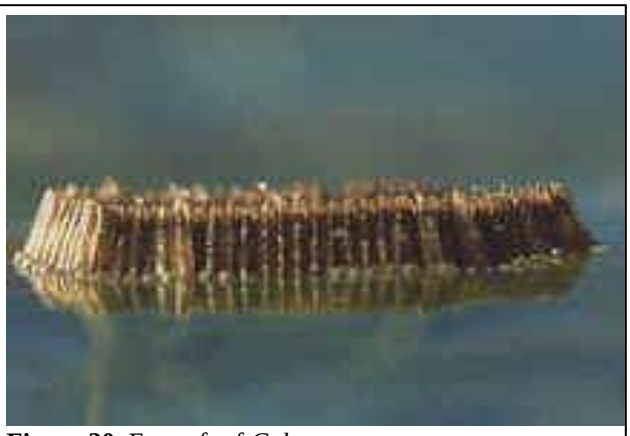

Figure 30. Egg raft of *Culex* sp.

Of the 7-10 species medically important Oklahoma mosquitoes, especially as vectors of West Nile Virus (http://www.ento.okstate.edu/mosquito/mosquito.html), four were found to occur on Fort Sill: *Culex quinquefasciatus* Say, *C. restuans* Theobald, *C. salinarius* Coquillett, and *C. tarsalis* Coquillett.

Recently, there has been some debate on the generic use of *Ochlerotatus.* Savage and Strickman (2004) urge the use

of *Ochlerotatus* as a subgenus of *Aedes*. We concur, however, we follow the most recent treatment of North American mosquitoes by Darsie and Ward (2005), who use *Ochlerotatus* as a genus.

Eggs

Eggs are laid on open water or on moist soil surfaces. Eggs are white when first deposited, darkening to a black or dark brown within 12-24 hours. Single eggs are about 1/50 inch (0.5mm) long, and those of most species appear similar when seen by the naked eye (one exception is the *Anopheles* spp. whose eggs have floats attached to each side of the egg). Some species lay eggs singly and others lay eggs together to form rafts. The incubation period (time between when eggs are laid and when they hatch) may vary considerably among species. Eggs of permanent-water mosquitoes are deposited on the water surface hatching in 1-3 days depending on temperature. Floodwater species deposit their eggs on moist soil or another wet substrate and have a wide variation in incubation periods. These eggs will not hatch until submerged by rising water caused by rainfall, melting snow in the spring, or other floodwater. Depending on the species and conditions these eggs may hatch the next time they are flooded, or may not hatch until they are flooded a year or more later.

Figure 31. *Aedes vexans* (Meigen) larvae.

Figure 32. *Ochlerotatus triseriatus* (Say) larvae.

Larvae

The larvae (also known as wigglers or wrigglers) (Figs. 31 and 32) occur in water and have four developmental stages or instars (1st, 2nd, 3rd, and 4th instars). The larvae are considered filter feeders, straining particulate organic material in the water. The larvae of most species have a respiratory tube or siphon and must come to the surface of the water to obtain oxygen. The total length of time of the larval stage depends on the species and the water temperature. Some larvae can complete develop in as little as 5 or 6 days. Upon maturity the 4th instar larvae molts into the pupal stage.

Figure 33. *Aedes vexans* (Meigen) pupae

Pupae

The mosquito pupa (Fig. 33) is very active and lives in water. The pupa has a comma-shaped body which is divisible into two distinct regions. The front region consists of the head and thorax (cephalothorax) and is greatly enlarged. It bears a pair of respiratory trumpets on the upper surface. Like the larval stage, the pupae must periodically come to the surface to get oxygen. The second region is the abdomen, which has freely-movable segments with a pair of paddle-like appendages at the tip. Feeding does not take place during the pupal stage. The pupal stage only lasts for a few days. The adult emerges directly from the pupal case on the surface of the water.

Adult

The adult mosquito is capable of flying long distances. Both females and males feed on nectars, which is a energy source. Males and females mate during the first 3 to 5 days after they have emerged. Females mate only once. Males generally live for only a week. Only the females feed on blood, which is what is occurring when they are biting. Females evidently gain little nourishment from blood meals but utilize the blood proteins (gonotrophic) to produce eggs. Many mosquitoes feed on any warm-blooded bird or mammal. The common Fort Sill mosquitoes prefer bird blood, especially *Culex* spp. mosquitoes which are known to transmit West Nile virus (WNV). Unfortunately many species feed on a wide range of warm-blooded mammals and humans are often attacked. Once a female has completely engorged she flies to a shaded environment until her eggs are completely developed, usually 3 to 5 days. Once the eggs are developed the female is called a gravid female and she begins to search for a desirable place to lay her eggs. If a female survives her egg laying activities, she will very soon start searching for another blood meal after which she will lay another batch of eggs. She does not need to mate a second time. Generally a female will only live long enough to lay 1 to 3 batches of eggs.

Figure 34. *Aedes vexans* (Meigen)

Most mosquito species are actively searching for a blood meal in the evening hours from just before dark until 2 to 3 hours after dark. During the daytime the females normally rest in cooler vegetated areas where the humidity is higher and they are protected from dessication. Females will often bite in the daytime if humans or animals invade the wooded areas where they are resting.

The following information is summarized from Rozeboom (1942), Carpenter and LaCasse (1955), Darsie and Ward (2005).

Aedes vexans (Meigen)

A well-known biter (Fig. 34) and often an abundant species, it ranges throughout North America. The immature stages are found in temporary rain-filled pools and pools formed by floods. The winter is passed in the egg stage. Rozeboom (1942) considered this species as one of the most common of all Oklahoma mosquito species. This species was common on Fort Sill.

Anopheles crucians Wiedeman

Larvae are found in standing water habitats, especially impoundments with aquatic vegetation, throughout the southeastern U.S. and the Midwest. Carpenter and LaCasse (1955) indicated the larvae prefer acidic waters. This species was historically implicated as a malaria vector. Adult females mostly bite at night.

Anopheles punctipennis (Say)

This widely distributed species occurs throughout the eastern half of North America and west to the Pacific Northwest and California. Rozeboom (1942) considered this species to be "the predominant Oklahoma mosquito, and is found all over the state." Larvae can be found in all types of water. Female adults bite mostly after dusk and rest in woodlands during the day.

Figure 35. *Culex quinquefasciatus* Say complex.

Coquillettidia perturbans (Walker)

This species is found throughout most of the eastern half of the U.S. and from Montana to California. Eggs are laid on the surface near dense aquatic vegetation, and after hatching larvae insert their siphon into submerged stems of plants where they remain throughout development. Females bite at night and are known vectors of Eastern Equine Encephalitis.

Culex erracticus (Dyar and Knab)

The larvae of this species typically occur around the edges of shallow ponds, lakes, and wetlands. The adults are considered not severe biters. This species is considered a midwestern and southeastern species.

Culex quinquefasciatus Say

Dr. Harry Savage, U.S, Department of Health and Human Services, Centers for Disease Control, Fort Collins, Colorado has indicated that *Cx. quinquefasciatus* (Fig. 35) specimens collected at Fort Sill may be hybrids, or belong in the *Cx. pipiens* complex.

Culex restuans Theobald

This species is widely distributed, occurring through much of North America. Larvae occur in a wide variety of habitats from artificial containers to pools in streams. Populations generally peak in early summer.

Culex salinarius Coquillett

This species occurs in the eastern U.S. and southeastern Canada. Isolated populations occur in several western states (Darsie and Ward 2005). The larvae are found in grassy pools, ditches, and ponds. Rozeboom (1942) considered this species to be one of the most persistent biters of humans in Oklahoma.

Figure 36. *Ochlerotatus canadensis canadensis* (Theobald).

Culex tarsalis Coquillett

This species occurs over much of North America with the exception of mid-Atlantic and northeastern states. Larvae can be collected from a variety of habitats ranging from marshes, stream, pools to ditches. Adult females bite painfully, attacking at dusk and after dark. Domestic and wild birds are preferred hosts. *Culex tarsalis* is an important vector of Western Equine Encephalitis and West Nile virus.

Ochlerotatus canadensis canadensis (Theobald)

This species (Fig. 36) is widely distributed across much of eastern and central North America. Larvae develop in temporary or semipermanent shaded woodland pools containing fallen leaves. It overwinters in the egg stage. Adult females are persistent biters, often attacking in shaded areas during the day.

Ochlerotatus epactius (Dyar and Knab)

This species was formerly considered a synonym of *O. atropalpus* (Coquillett) (Carpenter and LaCasse 1955), and so treated as that species by Rozeboom (1942). *Ochlerotatus atropalpus* is an eastern U.S. species not known from Oklahoma (Darsie and Ward 2005). The geographical range of *O. epactius* includes Arizona to Kansas, Missouri, Oklahoma, Arkansas, and Texas. Larvae are found in rain-filled rockholes. Adult females are persistent biters.

Ochlerotatus hendersoni (Cockerell)

This species occurs throughout most of the U.S. except the far West. Rozeboom (1942) treated this species as part of *Aedes triseriatus* (Say). Larvae occur in temporary rain pools.

Figure 37. *Ochlerotatus sollicitans* (Walker).

Ochlerotatus nigromaculis (Ludlow)

This mosquito ranges from southern Canada to central and western U.S. and Mexico. The winter is passed in the egg stage. Several generations per year can occur. The larvae prefer alkaline waters in rain-filled depressions. Adult females bite during the day.

Ochlerotatus sollicitans (Walker)

This species of mosquito (Fig. 37) has an interesting distribution, primarily found along the eastern coast of North America to Texas and Oklahoma. Scattered populations are known from numerous midwestern states and even as far west as Arizona (Darsie and Ward 2005). Larvae of this species are strongly associated with salt marshes and brackish water habitats. Adults are strong fliers and migrate many miles from saltwater habitats. Specimens collected at and near Ketch Pond may have flown in from surrounding oil fields, where brine pools are often available.

Ochlerotatus thelcter (Dyar)

This species was not originally listed by Rozeboom (1942), but was later added by Griffith (1952) to the Oklahoma fauna. This species appears to be restricted to Oklahoma, Texas, New Mexico, and Mexico. Larvae of this species are found in temporary pools.

Figure 38. *Ochlerotatus triseriatus* (Say).

Ochlerotatus triseriatus (Say)

This species (Fig. 38) ranges over most of eastern half of the U.S. It is considered the most widely distributed treehole breeding mosquito in North America. On Fort Sill, no doubt larvae are associated with both treeholes and artificial containers throughout the Fort (Appendix B).

Ochlerotatus trivittatus (Coquillett)

This species ranges from the east coast of U.S. to as far west as Idaho, Arizona, and Mexico. The larvae appear after summer rains in floodwater pools. Adult females are persistent biters, attacking at dusk and during the daytime.

Figure 39. *Psorophora ciliata* (F.).

Psorophora ciliata (F.)

This eastern U.S. North American species (Fig. 39) ranges over most of Oklahoma. The larvae are predators of other mosquito larvae, and typically occur in rain-filled pools where they develop rapidly. Females are persistent biters, attacking during the day.

Psorophora columbiae (Dyar and Knab)

This mosquito is widespread over the eastern half of the U.S., ranging as far west as California. This species was previously recognized in older literature as *P. confinnis* (Lynch Arribálzaga). It is considered an abundant and troublesome summer pest. Eggs overwinter and hatch in early summer when inundated by warm rainwater runoff.

Psorophora cyanescens (Coquillett)

This species is primarily a southeastern U.S. species ranging as far west as Kansas, Oklahoma, and Texas. The eggs of this species are deposited on the soil or in cracks. Larvae occur in rain-filled pools. Adult females are notorious biters.

Psorophora discolor (Coquillett)

This species ranges throughout the midwestern and southeastern U.S. and west to Texas and New Mexico. The larvae develop in temporary rain-filled pools and overflow areas of streams. Adult females are persistent biters.

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STRATIOMYIDAE (SOLDIER FLIES)

The scientific and the common name refer to the "armed thorax" that many species possess. Additionally, the metallic sheen and colorful green and yellow markings of many of the species are reminiscent of the armour and uniforms of soldiers. Adult flies are slender to robust, ranging from 2 mm to 19 mm. Adults are not common flies, and often very seasonal in occurrence. Adults are most commonly found resting on flowers (especially Apiaceae or Asteraceae) or found among vegetation around wet habitats and margins of streams and ponds. They often can be observed basking in the sun. Larvae of the subfamily Stratiomyinae are aquatic, found in a variety of habitats, including extreme environments such as hot springs and saline pools. Other soldier fly larvae can be found under bark, in decaying plant material, feeding on grass roots, and vertebrate dung. One species *Hermetia illucens* (L.) has been involved in human enteric myiasis. The larvae are unique in having their cuticle (skin) impregnated with calcium carbonate plates producing a shagreened surface (Fig. 40).

Figure 40. *Odontomyia* sp. larvae

About 267 species included in 40 genera occur in North America. Approximately 35 species of soldier flies have been recorded or may occur in Oklahoma. During this study, 13 different taxa (Appendix B) were collected, representing 37% of the estimated Oklahoma fauna. James (1981) presents a review of the family for North America.

Figure 41. *Hedriodiscus vertebratus*

Hedriodiscus vertebratus (Say)

This species (Fig. 41) is widespread over much of North America, and its occurrence in Oklahoma is not surprising. The larvae are associated with aquatic habitats.

Hedriodiscus sp.

This specimen could not be determined to species by Dr. Wilford Hansen, a Stratiomyidae expert. However, it represents another species other the *H. vertebratus*.

Hermetia aurata Bellardi

This species is known from the southwestern U.S. to Kansas, south to Texas. Larvae are scavengers in decaying organic material.

Hoplitmyia constans (Loew)

This is another species known from Arizona to Kansas, south to Arkansas and Texas. The larvae are associated with aquatic habitats.

Myxosargus texensis Curran

This species is known from Oklahoma and Texas.

Nemotelus glaber Loew

This species has been recorded from the eastern U.S. west to Texas.

Nemotelus variabilis Hanson

This species is widespread, recorded from California to Florida.

Figure 42. *Odontomyia cincta* Olivier.

Odontomyia cincta Olivier

This species (Fig. 42) is known from California to North Carolina south to Florida and west to Idaho. The larvae are associated with aquatic habitats.

Psellidotus fulvicornis (Curran)

This species is known from Oklahoma and Texas. It has been previously treated under the genus *Labostigmina.* The larvae are associated with aquatic habitats.

Psellidotus sp.

This specimen could not be determined to species by Dr. Wilford Hansen, a Stratiomyidae expert. However, it represents another species than previously mentioned.

Ptecticus trivittatus (Say)

This species is widespread over most of the U.S. Larvae are associated with decaying organic material, including excrement of cattle and horses.

Sargus cuprarius (L.)

This introduced European species is known from coast to coast. Larvae are terrestrial scavengers in decaying organic material, especially fruits and excrement.

Stratiomyia sp.

This specimen could not be determined to species by Dr. Wilford Hansen, a Stratiomyidae expert. It may represent a described or undescribed species.

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SYRPHIDAE (SYRPHID FLIES OR FLOWER FLIES)

Figure 43. The typical hovering behavior of male syrphid flies.

Flies of the family Syrphidae are known as flower flies, hover flies, and drone flies. They are conspicuous well-marked flies, usually with a pattern of yellow, orange or white on a black background. Many species are excellent mimics of bees and wasps. They are distinguished from other flies by the presence of a "spurious vein" in the wing. Adult syrphid flies commonly visit flowers and for some plants are important pollinators; in fact only second in importance to bees in cross-pollination of many economically important plants. Males of syrphids are often seen hovering almost motionless in the air, but dart swiftly aside when disturbed (Fig. 43). These flies are often active in sunlight areas (Figs. 44).

Larvae have a wide variety of habitats and food. Some are predaceous, attacking aphids and other soft-bodied arthropods. Other larvae are plant feeders or scavengers. A well-known scavenger is the "rat-tailed maggot" (Fig. 47) These larvae occur in tree holes or enriched bodies of water. The cosmopolitan *Eristalis tenax* (L.), the drone fly, so called because they mimic the drone of the honey bee.

Close to 900 species of Syrphidae occur in North America included in 89 genera (http://www.sel.barc.usda.gov/Diptera/syrphid/syrphna.htm), with about 65 species recorded from Oklahoma (Shorter and Drew 1976), a relatively low number considering the large number of species occurring in North America. During this study 25 species were identified representing 38% of the known Oklahoma species (Appendix B). Vockeroth (1992) presents an excellent review of one of the larger subfamilies of the family.

Figure 44. *Allograpta obliqua* (Say), a well-known small species of syrphid fly occurring on Fort Sill, Oklahoma.

Allograpta exoticus (Wiedemann)

This species was not included by Shorter and Drew (1976), and is a new state record. This species is apparently widespread from the Pacific Northwest to the East coast.

Allograpta obliqua (Say)

This species (Fig. 44) is common in Oklahoma (Shorter and Drew 1976) and widespread over North America including the Neotropics.

Figure 45. *Helophilus latifrons* Loew, a common species found on Fort Sill

Chalcosyrphus metallicus (Wiedemann

This species occurs from Maryland to Florida west to Texas and Illinois. It was included in the genus *Xylota* by Shorter and Drew (1976).

Chrysogaster antitheus Walker

This species is treated in Wirth et al. (1983) as a possible synonym of *C. nigripes* Loew. Shorter and Drew (1976) do not list either species. This species has been recorded from eastern North America, and it represents a new state record for Oklahoma.

Copestylum vittatum (Macquart)

This species is known from the eastern U. S. to Texas. It appears to be a new state record.

Eristalis stipator Osten Sacken

Shorter and Drew (1976) treated this species as *E. latifrons* Loew (Fig. 46). It is considered a common species throughout its range, which includes much of North America.

Helophilus latifrons Loew

This species (Fig. 45) is widespread over much of North America, and adults are active from April to November.

Mallota bautias (Walker)

Shorter and Drew (1976) consider this species "fairly common" in Oklahoma. It occurs from Quebec to Florida west to Texas and Colorado.

Figure 46. *Eristalis stipator* Osten Sacken.

Mesograpta marginata (Say)

This is a widespread syrphid species, recorded from British Columbia, Canada to Florida and Central America. This species is common in Oklahoma.

Microdon baliopterus Loew

The Fort Sill specimens represent a new state record for Oklahoma. Shorter and Drew (1976) recorded only *M. fulgens* Wiedemann from Oklahoma. *Microdon baliopterus* is recorded from the Northeast south to Florida, west to Texas and California.

Microdon laetus Loew

This is a widespread species recorded from Texas to Maryland and Florida. This apparently is another new state record for Oklahoma.

Microdon rufipes (Macquart)

This species is found in eastern U.S. Shorter and Drew (1976) did not list this species. The larvae are associated with ant nests.

Figure 47. A typical rat-tailed maggot of the genus *Eristalis* These larvae are found in tree holes or in highly enriched bodies of water.

Ocyptamus fuscipennis (Say)

Formerly placed in the genus *Baccha*, Shorter and Drew (1976) indicates that this species is a widely distributed species in North America, known from most areas of the U.S.

Orthonevra nitida (Wiedemann)

This species is a geographically widespread species, known from eastern Canada to Florida, west to Arizona and Texas. Shorter and Drew (1976) treated this species in the genus *Chrysogaster*.

Paragus haemorrhous Meigen

This cosmopolitan species is widespread is known from most areas in North America. This species was previously known as *P. tibialis* (Fállen), and was so treated by Shorter and Drew (1976).

Palpada agrorum (Fab.)

Wirth et al. (1983) included this species in *Eristalis*. This may be a new state record for Oklahoma. Previously, Wirth et al. (1983) indicated this species is known from Forida and Louisiana.

Palpada alhambra Hull

Wirth et al. (1983) included this species in *Eristalis*. This may be a new state record for Oklahoma. Previously, Wirth et al. (1983) indicated this species is known from California and Arizona.

Palpada vinetorum (Fab.)

This species is widespread over the U.S. and ranges in Central and South America. It was included in the genus *Eristalis* by Shorter and Drew (1976).

Pseudodoros clavatus (Fab.)

Shorter and Drew (1976) treated this species under *Baccha*. This species is widespread over the U.S. from California to east coast south to Florida.

Platycheirus quadratus (Say)

This species ranges from southern Canada to California, New Mexico and east to Florida. The larvae of this species are known to feed on aphids.

Sphaerophoria contigua Macquart

This species ranges from Canada south to California, Mexico and east to Florida. Larvae of this species are a well-known aphid predator. This common species was not listed by Shorter and Drew (1976) from Oklahoma.

Spilomyia longicornis Loew

This relatively large, brightly marked mimic of wasps is known from Oklahoma (Shorter and Drew 1976). This species has been recorded from eastern Canada to Florida west to Texas and Minnesota.

Syritta pipiens (L.)

A common species in Oklahoma, it ranges over much of North America and also Eurasia.

Tropidia albistylum Macquart

Thi species is known from New Jersey to Florida, west to Oklahoma and Texas.

Toxomerus marginatus (Say)

This species ranges from Canada to Peru, and is known from Hawaii. It was not reported by Shorter and Drew (1976), but the closely related *T. geminatus* (Say) was listed by these authors.

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TABANIDAE (HORSE AND DEER FLIES)

The Tabanidae, commonly known as horse flies and deer flies are well-known blood feeders of wild and domesticated animals and humans (Teskey 1990). These flies cut through the skin with their knife-like mouthparts and suck the blood for several minutes. When they fly away, a drop or two of blood usually exudes from the wound, permitting secondary feeding sites for other nuisance insects. Horse and deer flies are potential vectors of such diseases as anthrax, tularemia, anaplasmosis, hog cholera, equine infectious anemia, and filariasis (Mullen and Durden 2002). Also, deer and horse flies are suspected of transmitting Lyme disease (Luger 1990). Biting deer flies frequently attack humans along beaches, near streams, and at the edges of moist, wooded areas. Some people, when bitten, suffer severe lesions, high fever, and even general disability. Symptoms are allergic reactions to hemorrhagic saliva released into the wound to prevent clotting while the fly is feeding.

Figure 48. A male of *Tabanus abactor* Philip

Horse flies are considerably larger than deer flies, heavy bodied from 3/4 inch to over an inch long. Smaller species are brown, black or gray, and often have brilliant green eyes. The eyes are sometimes crossed with reddish-gold bands that disappear when the fly dies. Larger species are brown to black and may be slightly striped. Horse flies usually have clear wings (Figs. 50) whereas deer flies have wings with dark banding (Fig. 51). Deer flies frequently attack humans, whereas horse flies usually attack livestock.

Eggs are dark, shiny, spindle-shaped and in layered masses (tiers) of a few to several hundred on vegetation in or hanging over the water. Fully-grown larvae are cylindrical, tapering toward each end, whitish or yellowish gray, banded with black or brown and a fleshy elevated ring on each body segment (Fig. 49).

The life cycles of both horse flies and deer flies are similar. Eggs are deposited in masses usually on vegetation or other objects over water near the larval habitat. After eggs hatch in 5 to 12 days, small larvae drop down and burrow into moist, wet soil found in marshes, stream banks, and bottoms of lakes and ponds. They may drop into rapidly flowing streams or burrow into dry soil. Larvae feed on organic debris, other insects, tiny crustaceans, snails, earthworms, and aquatic or semiaquatic organisms. Larvae

Figure 49. The larvae of *Tabanus atratus* Fabricius.

overwinter in muddy soils, maturing in late spring. Pupation occurs in dry soil. The larval stage is about one year or up to two to three years for some species. The pupal period may range from 6 to 12 days depending on temperature and species. Adults are strong fliers, and appear in early summer with females feeding on blood while males feed on flower nectar, honeydew, plant juices, and other liquids. The life cycle may require from two months to two or three years, depending on the species and geographical region. Both horse flies and deer flies are active in bright sunshine of the summer on days with little or no wind. Female adults resting on foliage are usually instantly stimulated to flight by moment of a nearby animal or person, darting in to attempt to take a blood meal for egg production. Each species has a specific flight season.

Figure 50. *Chlorotabanus crepuscularis* (Bequaert), a beautiful green to greenish yellow horse fly that flies after dark on Fort Sill, Oklahoma.

Wright et al. (1986) provides a list of the tabanids known from Oklahoma, recording 64 species. During this survey we collected 20 species (Appendix B), representing 31% of the known Oklahoma species.

Vaughn and Obermeyer (2002) reported at least five additional species of tabanids from Fort Sill, *Silvius quadrivittatus* (Say), *Chrysops brunneus* Hine, *C. celatus* Pechuman, and *Tabanus melanocerus* Wiedemann. *Chrysops celatus* was not listed from Oklahoma by Wright et al. 1986). Additionally, Vaughn and Obermeyer (2002) reported *T. similis* Macquart from Fort Sill, but this species was not reported from Oklahoma (Wright et al. 1986), Arkansas (Carlton and Lancaster (1995), and Texas (Goodwin and Drees (1996). It is known from the eastern U.S. The tabanid material mentioned by Vaughn and Obermeyer (2002) was not available for study. Inquiries were made to the Sam Noble Oklahoma Museum of Natural History, Norman, Oklahoma.

The horse flies, *Tabanus abactor* Philip, *T. sublongus* Stone, and *T. subsimilus* Bellardi are very common on Fort Sill. Goodwin and Drees (1996) provided a good treatment of these fascinating flies for neighboring Texas.

*Anacimas dodge*i (Whitney)

This infrequently collected species is known from western Oklahoma, including the panhandle, as well as Kansas and Nebraska.

Figure 51. *Chrysops callidus* Osten Sacken,

Chlorotabanus crepuscularis (Bequaert)

This beautiful green to greenish yellow horse fly (Fig. 50) occurs throughout the southeastern U.S. from Texas and Arkansas to New Jersey. As its name implies, adults are crepuscular, active at sunset and early evening.

Chrysops callidus Osten Sacken

This deer fly occurs throughout Oklahoma east of the panhandle, and has been widely collected over the eastern United States. Larvae are usually associated with edges of streams.

Chrysops flavidus Wiedemann

This small species of deer fly is known to occur in eastern Oklahoma, east of the panhandle. In addition it is widespread throughout the eastern United States, as far north as the Great Lakes and a far south as Mexico. Larvae are often associated with standing water habitats.

Chrysops pikei Whitney

This species (Fig. 41) has an extensive distribution in the Midwestern and southern United States, and as far north as southern Canada. Wright et al. (1986) considered this species throughout Oklahoma east of the panhandle.

Chrysops sequax Williston

This species is known from much of the central U.S., from Texas to western Pennsylvania and North Dakota. Larvae have been collectred along the margins of ponds.

Esenbeckia incisuralus (Say)

This pongonine horse fly is known as a southwestern species that occurs in the eastern part of Oklahoma, Texas, Kansas, Arizona, New Mexico and in northern Mexico. Females of this genus may not feed on blood.

Hybomitra lasiophthalma (Macquart)

This species is known from eastern half of the U.S., except for the extreme southeast. Larvae often occur in waterlogged wood in ponds and marshes.

Tabanus abactor Philip

Widely and commonly collected at Fort Sill, this southwestern species (Fig. 48) has been found in Mexico, Texas, Kansas, New Mexico and all of Oklahoma east of the panhandle. It is considered a serious pest of cattle.

Figure 52. *Tabanus atratus* Fabricius

Tabanus atratus Fabricius

This large black horse fly (Fig. 52) has been collected as far north as Canada, as far south as Mexico, and throughout the entire eastern United States to Texas and North and South Dakota. Larvae can be found in mud at the margins of streams, ponds, and lakes of Fort Sill.

Tabanus cymatophorus Osten Sacken

The single specimen collected at Rock Creek, in the Quanah Range, is considered a south central U.S. species. It is known from the eastern 1/3 of Oklahoma, Texas, southern Missouri to central Georgia, North and South Carolina, New Jersey, Delaware and Virginia. Larvae of this species have been collected from ponds.

Tabanus dorsifer Walker

The geographical range of this species is immense, from Belize in Central America north to Arizona to Texas. Wright et al. (1986) first reported it as a new state record from Murray Co., Oklahoma.

Tabanus equalis Hine

Found throughout eastern Oklahoma, east of the panhandle, this species of horse fly is also occurs from central U.S. to Texas reaching its western limits in mid Kansas and Oklahoma. Little is known about the immature stages of this horse fly.

Tabanus mularis Stone

This small species is found in Texas, Oklahoma and Kansas and with the exception of Florida, this widespread horse fly is known to occur throughout the eastern United States. In Oklahoma, Wright et al. (1986) lists this species as occurring in all of the state, east of the panhandle.

Tabanus rufofrater Walker

This species is known from Louisana to North Carolina. Goodwin and Drees (1996) did not report it from Texas. The Fort Sill specimen represents a new state record (Wright et al. 1986).

Tabanus stygius Say

Found throughout most of the eastern United States, this common species is also known to occur in eastern Colorado, Nebraska, Kansas, eastern Iowa, and Arkansas. In Oklahoma this horsefly is

restricted to the eastern part of the state. Larvae are usually associated with edges of slow moving streams.

Tabanus sublongus Stone

This common Fort Sill species is found throughout the southern two-thirds of the eastern U.S. The immature stages are unknown. Wright et al. (1986) indicates that it occurs in eastern one-third of Oklahoma.

Figure 53. *Tabanus sulcifrons* Macquart feeding.

Tabanus subsimilus Bellardi

This common species is found throughout the entire United States into Mexico. This species can be collected throughout Oklahoma. Larvae have been collected along the edges of small lakes and ponds.

Tabanus sulcifrons Macquart

This common horsefly (Fig. 53) is known to occur in the eastern United States, Texas, Kansas, Nebraska, and Iowa. Little is known about the biology of this species.

Tabanus trimaculatus Palisot de Beauvois

This striking species of horse fly is known from throughout the eastern half of the U.S., excluding Florida. Wright et al. (1986) indicated that it occurs in all of Oklahoma east of the panhandle. The larvae occur in the mud surrounding streams and lakes.

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Fort Sill is a great place to work, with a natural resources staff that has a wonderful understanding for protecting and managing the special nature occurring on Fort Sill. If one appreciates insects, Fort Sill is the place to visit!

We would like thanks the following individuals, for permission to use their photographs in this reports: Gerald J. Lenhard (Fig. 40), Lacy L. Hyche (Fig. 14), Susan Ellis (Fig. 44), Sturgis Mckeever (Figs. 49-53), Tom Murray (Figs. 35, 36, 39), Giff Beaton (*Eccritosia zamon*), Michele Cutwa-Francis (Figs. 29, 31, 32, 33, 34, 37, 38), and Clemson University- USDA Cooperative Extension Slide Series (Figs. 10, 13, 19).

Appendix A. Cumulative checklist of the Arthropoda collected on Fort Sill, Comanche Co., Oklahoma from 2002-2006 (Kondratieff et al. 2003, 2004, Opler 2005 and this report).

Order	Family	Scientific	Taxonomic Authority
Acari			
	Ixodidae		
		Amblyomma americanum	(Linnaeus)
		Ambylomma maculatum	Koch
		Dermacentor albipictus	(Packard)
		Dermacentor variabilis	(Say)
		Ixodes scapularis	Say
Araneae			
	Agelenidae		
		Agelenopsis emertoni	Chamb. & Ivie.
		Agelenopsis naevia	(Walckenaer)
		Agelenopsis oklahoma	(Gertsch)
	Amaurobiidae		
		Coras lamellosus	(Keyserling)
	Anyphaenidae		
		Anyphaena fraterna	(Banks)
		Hibana gracilis	(Hentz)
	Araneidae		
		Acacesia hamata	(Hentz)
		Acanthepeira stellata	(Walckenaer)
		Araneus cingulatus	(Walckenaer)
		Araneus pegnia	(Walckenaer)
		Argiope aurantia	Lucas
		Argiope trifasciata	(Forskål)
		Cyclosa turbinata	(Walckenaer)
		Eustala anastera	(Walckenaer)
		Eustala cepina	(Walckenaer)
		Eustala emertoni	(Banks)
		Hypsosinga rubens	(Hentz)
		Larinia directa	(Hentz)
		Larinioides cornutus	(Clerck)
		Larinioides patagiatus	(Clerck)
		Mangora fascialata	Franganillo
		Mangora gibberosa	(Hentz)
		Mangora maculata	(Keyserling)
		Mangora placida	(Hentz)

Order	Family	Scientific	Taxonomic Authority
		Mecynogea lemniscata	(Walckenaer)
		Metepeira labyrinthea	(Hentz)
		Micrathena gracilis	(Walckenaer)
		Neoscona arabesca	(Walckenaer)
		Neoscona crucifera	(Lucas)
		Neoscona domiciliorum	(Hentz)
		Neoscona oaxacensis	(Keyserling)
		Neoscona utahana	(Chamberlin)
		Singa keyserlingi	McCook
	Clubionidae		
		Clubiona abboti	Koch
		Elaver excepta	(Koch)
	Corinnidae		
		Castianeira gertschi	Kaston
		Phrurotimpus certus	Gertsch
		Scotinella redempta	(Gertsch)
		Trachelas tranquillus	(Hentz)
	Dictynidae		
		Dictyna bellans	Chamberlin
		Dictyna calcarata	Banks
		Dictyna foliacea	(Hentz)
		Dictyna volucripes	Keyserling
		Emblyna sublata	(Hentz)
		Lathys delicatula	(Gertsch & Mulaik)
		Phantyna segregata	(Gertsch & Mulaik)
	Filistatidae		
		Kukulcania hibernalis	(Hentz)
	Gnaphosidae		
		Callilepis imbecilla	Keyserling
		Cesonia bilineata	(Hentz)
		Drassodes gosiutus	Chamberlin
		Drassyllus lepidus	(Banks)
		Gnaphosa fontinalis	Keyserling
		Haplodrassus signifer	(Koch)
		Herpyllus ecclesiasticus	Hentz
		Sergiolus capulatus	(Walckenaer)
		Talanites exlineae	(Platnick & Shadab)

Order	Family	Scientific	Taxonomic Authority
	Hahniidae		
		Hahnia flaviceps	Emerton
	Linyphiidae		
		Ceratinella brunnea	Emerton
		Eperigone albula	Zorsch & Crosby
		Eperigone eschatologica	(Crosby)
		Eperigone maculata	(Banks)
		Frontinella communis	(Hentz)
		Grammonota vittata	Barrows
		Meioneta dactylata	(Chamberlin & Ivie)
		Meioneta leucophora	(Chamberlin & Ivie)
		Neriene radiata	(Walckenaer)
	Lycosidae		
		Allocosa funerea	(Hentz)
		Allocosa noctuabunda	(Montgomery)
		Arctosa littoralis	(Hentz)
		Hogna helluo	(Walckenaer)
		Pardosa delicatula	Gertsch & Wallace
		Pardosa mercurialis	Montgomery
		Pardosa milvina	(Hentz)
		Pardosa pauxilla	Montgomery
		Pardosa steva	Lowrie & Gertsch
		Pirata apalacheus	Gertsch
		Pirata insularis	Emerton
		Rabidosa punctulata	(Hentz)
		Rabidosa rabida	(Walckenaer)
		Schizocosa mccooki	(Montgomery)
		Schizocosa ocreata	(Hentz)
		Trochosa ruricola	(De Geer)
		Varacosa avara	(Keyserling)
		Varacosa shenandoa	(Chamberlin & Ivie)
	Mimetidae		
		Mimetus puritanus	Chamberlin
	Miturgidae		
		Cheiracanthium inclusum	(Hentz)
	Oxyopidae		
		Oxyopes salticus	Hentz

Order	Family	Scientific	Taxonomic Authority
		Peucetia viridans	(Hentz)
	Philodromidae		
		Apollophanes margareta	Lowrie & Gertsch
		Philodromus cespitum	(Walckenaer)
		Philodromus imbecillus	Keyserling
		Philodromus keyserlingi	Marx
		Philodromus marxi	Keyserling
		Philodromus pratariae	(Scheffer)
		Philodromus rufus	Walckenaer
		Thanatus rubicellus	Mello-Leitão
		Tibellus chamberlini	Gertsch
		Tibellus duttoni	(Hentz)
	Pholcidae		
		Psilochorus imitatus	Gertsch & Mulaik
	Pisauridae		
		Pisaurina dubia	(Hentz)
		Pisaurina mira	(Walckenaer)
	Salticidae		
		Eris militaris	(Hentz)
		Habronattus cognatus	(Peckham & Peckham)
		Habronattus texanus	(Chamberlin)
		Hentzia palmarum	(Hentz)
		Maevia inclemens	(Walckenaer)
		Marpissa formosa	(Banks)
		Marpissa pikei	(Peckham & Peckham)
		Metacyrba taeniola	(Hentz)
		Metaphidippus chera	(Chamberlin)
		Paraphidippus aurantius	(Lucas)
		Pelegrina galathea	(Walckenaer)
		Pelegrina peckhamorum	(Kaston)
		Pelegrina proterva	(Walckenaer)
		Pelegrina sabinema	Maddison
		Phidippus ardens	Peckham & Peckham
		Phidippus audax	(Hentz)
		Phidippus cardinalis	(Hentz)
		Phidippus carolinensis	Peckham & Peckham
		Phidippus clarus	Keyserling

Order	Family	Scientific	Taxonomic Authority
		Phidippus mystaceus	(Hentz)
		Phidippus pius	Scheffer
		Phlegra hentzi	(Marx)
		Poultonella alboimmaculata	Peckham & Peckham
		Salticus austinensis	Gertsch
		Sassacus papenhoei	Peckham & Peckham
		Sassacus vitis	(Cockerell)
		Thiodina puerpera	(Hentz)
		Thiodina sylvana	(Hentz)
		Tutelina elegans	(Hentz)
		Zygoballus rufipes	Peckham & Peckham
	Scytodidae		
		Scytodes n. sp.	
	Sicariidae		
		Loxosceles reclusa	Gertsch & Mulaik
	Tetragnathidae		
		Glenognatha foxi	(McCook)
		Leucauge venusta	(Walckenaer)
		Tetragnatha elongata	(Walckenaer)
		Tetragnatha guatemalensis	Cambridge
		Tetragnatha laboriosa	Hentz
		Tetragnatha pallescens	Cambridge
	Theraphosidae		
		Aphonopelma hentzi	(Girard)
	Theridiidae		
		Argyrodes elevatus	Taczanowski
		Euryopis lineatipes	Cambridge
		Latrodectus mactans	Chamberlin & Ivie
		Latrodectus variolus	Walckenaer
		Steatoda medialis	(Banks)
		Steatoda triangulosa	(Walckenaer)
		Stemmops ornatus	(Bryant)
		Theridion differens	Emerton
		Theridion goodnightorum	Levi
		Theridion murarium	Emerton
		Theridion rabuni	Chamberlin & Ivie
		Thymoites marxi	(Crosby)

Order	Family	Scientific	Taxonomic Authority
		Thymoites pallidus	(Emerton)
		Wamba crispulus	(Simon)
	Thomisidae		
		Misumena vatia	(Clerck)
		Misumenops asperatus	(Hentz)
		Misumenops celer	(Hentz)
		Misumenops oblongus	(Keyserling)
		Ozyptila monroensis	Keyserling
		Synema parvulum	(Hentz)
		Tmarus angulatus	(Walckenaer)
		Xysticus ampullatus	Turnbull, Dondale & Redner
		Xysticus auctificus	Keyserling
		Xysticus ferox	(Hentz)
		Xysticus funestus	Keyserling
		Xysticus gulosus	Keyserling
		Xysticus pellax	Cambridge
	Uloboridae		
		Uloborus glomosus	(Walckenaer)
Scorpiones			
	Buthidae		
		Centruroides vittatus	(Say)
Coleoptera			
	Buprestidae		
		Acmaeodera macra	Horn
		Acmaeodera mixta	LeConte
		Acmaeodera ornata	(Fabricius)
		Acmaeodera pulchella	(Herbst)
		Acmaeodera tubulus	(Fabricius)
		Agrilaxia flavimana	(Gory)
		Agrilus bilineatus	(Weber)
		Agrilus impexus	Horn
		Agrilus politus	(Say)
		Brachys aerosus	Melsheimer
		Anthaxia viridicornis	Say
		Buprestis confluenta	Say
		Buprestis rufipes	Olivier
		Chrysobothris adelpha	Gemminger and Harold
		Chrysobothris cribraria	Mannerheim
		Chrysobothris femorata	(Olivier)
		Lampetis drummondi	(Laporte and Gory)
		Taphrocerus agriloides	Crotch
	Carabidae		
		Acupalpus partiarius	(Say)
		Acupalpus pauperculus	Dejean

Order	Family	Scientific	Taxonomic Authority
		Acupalpus testaceus	Dejean
		Agonum decora	(Say)
		Agonum extensicollis	(Say)
		Agonum pallipes	(Fabricius)
		Agonum punctiformis	(Say)
		Amara fortis	LeConte
		Amara impuncticollis	(Say)
		Amara pennsylvanica	Hayward
		Amara sp.	
		Amphasia interstitalis	(Say)
		Amphasia sericeus	(Harris)
		Anisodactylus dulcicollis	(Laferte)
		Anisodactylus harpaloides	(Laferte)
		Anisodactylus merula	(Germar)
		Anisodactylus opaculus	(LeConte)
		Anisodactylus rusticus	(Say)
		Ardistomis schaumii	LeConte
		Aspidoglossa subangulatus	(Chaudoir)
		Bembidion americanum	Dejean
		Bembidion chalceum	Dejean
		Bembidion confusum	Hayward
		Bembidion cordatus	(LeConte)
		Bembidion coxendix	Say
		Bembidion rapidum	(LeConte)
		Bembidion texanum	Chaudoir
		Bembidion variegatum	Say
		Brachins elongatulus	(Chaudoir)
		Brachinus adustipennis	Erwin
		Brachinus alternans	Dejean
		Brachinus elongatulus	(Chaudoir)
		Brachinus janthinipennis	(Dejean)
		Brachinus kansanus	LeConte
		Brachinus phaeocerus	Chaudoir
		Brachinus sp.	
		Brachinus tenuicollis	LeConte
		Bradycellus neglectus	(LeConte)
		Bradycellus rupestris	(Say)
		Bradycellus sp.	
		Calathus opaculus	LeConte
		Calosoma macrum	LeConte

Order	Family	Scientific	Taxonomic Authority
		Calosoma marginalis	Casey
		Calosoma obsoleta	Say
		Calosoma scrutator	(Fabricius)
		Calosoma wilcoxi	LeConte
		Carabus finitimus	Haldeman
		Chlaenius brevilabris	LeConte
		Chlaenius erythropus	Germar
		Chlaenius laticollis	Say
		Chlaenius platyderus	Chaudoir
		Chlaenius sericeus	(Forster)
		Chlaenius solitarius	Say
		Chlaenius tomentosus	(Say)
		Chlaenius tricolor	Dejean
		Clivina bipustulatus	(Fabricius)
		Clivina dentipes	Dejean
		Colliuris pensylvanicus	(Linnaeus)
		Cratacanthus dubius	(Beauvois)
		Cyclotrachelus incisa	(LeConte)
		Cyclotrachelus torvus deceptus	(Casey)
		Cymindis laticollis	Say
		Cymindis pilosus	Say
		Dicaelus elongatus	Bonelli
		Diplocheila impressicollis	(Dejean)
		Diplocheila obtusus	(LeConte)
		Discoderus parallelus	(Haldeman)
		Discoderus sp.	
		Dyschiriodes campicola	Lindroth
		Dyschirius erythrocerus	LeConte
		Dyschirius globulosa	(Say)
		Elaphropus sp.	
		Galerita bicolor	Drury
		Galerita mexicana	Chaudoir
		Harpalus caliginosus	(Fabricius)
		Harpalus compar	LeConte
		Harpalus faunus	Say
		Harpalus fulgens	Csiki
		Harpalus gravis	LeConte
		Harpalus katiae	Battoni

Order	Family	Scientific	Taxonomic Authority
		Harpalus laticeps	LeConte
		Harpalus longicollis	LeConte
		Helluomorphoides praeustus bicolor	(Harris)
		Helluomorphoides texana	(LeConte)
		Lachnophorus elegantulus	Mannerheim
		Lebia atriventris	Say
		Lebia grandis	Hentz
		Lebia ornata	Say
		Lebia pulchella	Dejean
		Lebia solea	Hentz
		Lebia viridis	Say
		Lebia vittatus	(Fabricius)
		Morion monilicornis	(Latreille)
		Notiobia maculicornis	(Chaudoir)
		Notiobia sayi	(Blatchley)
		Notiobia terminata	(Say)
		Omophron americanum	Dejean
		Omophron nitidum	LeConte
		Oodes amaroides	Dejean
		Panagaeus fasciatus	Say
		Paratachys proximus	(Say)
		Pasimachus californicus	Chaudoir
		Pasimachus elongatus	LeConte
		Pentagonica picticornis	Bates
		Poecilus chalcites	(Say)
		Poecilus lucublanda	(Say)
		Poecilus scitulus	LeConte
		Pogonodaptus mexicana	(Bates)
		Pseudaptinus tenuicollis	(LeConte)
		Pterostichus permunda	(Say)
		Scaphinotus cavicollis	(LeConte)
		Scaphinotus elevatus	(Fabricius)
		Scarites quadriceps	Chaudoir
		Scarites sp.	
		Scarites subterraneus	Fabricius
		Schizogenius brevisetosus	Whitehead
		Schizogenius falli	Whitehead
		Schizogenius lineolatus	(Say)

Order	Family	Scientific	Taxonomic Authority
		Schizogenius ozarkensis	Whitehead
		Schizogenius scopaeus	Whitehead
		Selenophorus ellipticus	Dejean
		Selenophorus hylacis	(Say)
		Selenophorus pedicularis	Dejean
		Semiardistomis viridis	(Say)
		Stenocrepis cupreus	(Chaudoir)
		Stenolophus conjunctus	(Say)
		Stenolophus dissimilis	Dejean
		Stenolophus lecontei	(Chaudoir)
		Stenolophus lineola	(Fabricius)
		Stenolophus ochropeza	(Say)
		Stenolophus sp.	
		Stenomorphus californicum rufipes	LeConte
		Tetragonoderus fasciata	(Haldeman)
		Thalpius sp. B	
		Zuphium americanum	Dejean
		Zuphium sp.	
	Cerambycidae		
		Aethcerinus latecinctus	(Horn)
		Aethcerinus wilsonii	(Horn)
		Aneflomorpha sp.	
		Anelaphus villosus	(Fabricius)
		Anelphus moestus moestus	(LeConte)
		Ataxia crypta	(Say)
		Ataxia hubbardi	Fisher
		Atimia confusa confusa	(Say)
		Batyle ignicollis	(Say)
		Batyle suturalis cylindrella	Casey
		Batyle suturalis suturalis	(Say)
		Crossidius d. discoideum	(Say)
		Dectes texanus	LeConte
		Distenia undatus	(Fabricius)
		Dorcaschema alternatum	(Say)
		Eburia quadrigeminata	(Say)
		Ecyrus dasycerus	(Say)
		Elaphidion mucronatus	(Say)
		Enaphalodes atomarius	(Drury)

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		Enaphalodes rufulum	(Haldeman)
		Euderces picipes occidentalis	Linsley
		Euderces reichei	LeConte
		Graphisurus triangulifer	(Haldeman)
		Hemierana marginata ardens	LeConte
		Hippopsis lemniscata	(Fabricius)
		Knulliana cincta cincta	(Drury)
		Leptostylopsis transversus	(Gyllenhal)
		Leptura emarginata	Fabricius
		Lepturges angulatus	(LeConte)
		Lepturges confluens	(Haldeman)
		Liopinus sp.	
		Mecas cana saturnina	(LeConte)
		Mecas marginella	LeConte
		Mecas pergrata	(Say)
		Megacyllene decora	(Olivier)
		Molorchus bimaculatus	Say
		Moneilema armatum	LeConte
		Neoclytus mucronatus mucronatus	(Fabricius)
		Neoclytus scutellaris	(Olivier)
		Oberea ocellata	Haldeman
		Oberea oculaticollis	(Say)
		Oberea tripunctata	(Swederus)
		Obrium maculatum	(Olivier)
		Obrium rufulum	Gahan
		Oncideres cingulata	(Say)
		Paralaphidion incertum	(Newman)
		Phymatodes varius	(Fabricius)
		Plectrodera scalator	(Fabricius)
		Plinthocoelium suaveolens	(Linnaeus)
		Psyrassa unicolor	(Randall)
		Saperda tridentata	Olivier
		Smodicum cucujiforme	(Say)
		Stenocorus cinnamoptera	(Randall)
		Stenosphenus notatus	(Olivier)
		Sternidius variegatus	(Haldeman)
		Strangalia luteicornis	(Fabricius)
		Strangalia sexnotata	Haldeman

Order	Family	Scientific	Taxonomic Authority
		Strangalia virilis	LeConte
		Tessaropa tenuipes	(Haldeman)
		Tetraopes texanus	Horn
		Trigonarthris atrata	(LeConte)
		Tylonotus bimaculatus	Haldeman
		Typocerus confluens	Casey
		Typocerus octonotata	(Haldeman)
		Typocerus velutina nobilis	(Newman)
		Urographis despectus	(LeConte)
		Xylotrechus colonus	(Fabricius)
	Ceratocanthidae		
		Germarostes aphodioides	(Illiger)
		Germarostes globosus	(Say)
	Chrysomelidae		
		Altica foliaceae	LeConte
		Altica spp.	
		Anisostena nigrita	(Olivier)
		Anomoea flavokansiensis	Moldenke
		Anomoea laticlavia	(Forster)
		Asphaera lustrans	(Crotch)
		Baliosus nervosus	(Panzer)
		Bassareus clatharatus	(Melsheimer)
		Bassareus lituratus	(Fabricius)
		Bassareus mammifer	Newman
		Blepharida rhois	(Forster)
		Calligrapha bidenticola	Brown
		Calligrapha sp.	
		Capraita sexmaculata	(Illiger)
		Chaetocnema denticulata	(Illiger)
		Chaetocnema pulicaria	Melsheimer
		Chrysochus auratus	(Fabricius)
		Chrysolina flavomarginata	(Say)
		Chrysomela knabi	Brown
		Colaspis crinicornis chittendeni	Blake
		Colaspis sp.	
		Coleothorpa axillaris	(LeConte)
		Coleothorpa dominicana franciscana	(LeConte)

Order	Family	Scientific	Taxonomic Authority
		Coscinoptera aeneipennis	(LeConte)
		Cryptocephalus calidus	Suffrian
		Cryptocephalus guttulatus	Olivier
		Cryptocephalus leucomelas leucomelas	Suffrian
		Cryptocephalus mutabilis	Melsheimer
		Cryptocephalus notatus	Fabricius
		Cryptocephalus quadreplex	Newman
		Cryptocephalus venustus	Fabricius
		Derospidea brevicollis	(LeConte)
		Diabrotica cristata	(Harris)
		Diabrotica tibialis	Jacoby
		Diabrotica undecimpunctata howardi	Barber
		Diachus auratus	(Fabricius)
		Diachus auratus	(Fabricius)
		Distigmoptera impennata	Blake
		Donacia biimpressa	Melsheimer
		Donacia hypoleuca	Lacordaire
		Exema canadensis	Pierce
		Exema dispar	Lacordaire
		Graphops n. sp.	
		Graphops sp.	
		Jonthonota nigripes	(Olivier)
		Leptinotarsa decemlineata	(Say)
		Longitarsus sp.	
		Luperosoma parallelum	(Horn)
		Lysathia ludoviciana	(Fall)
		Metachroma laevicolle	Crotch
		Metrioidea blakeae	(Wilcox)
		Metrioidea brunnea	(Crotch)
		Metrioidea popenoei	(Blake)
		Microrhopala excavata excavata	(Olivier)
		Microrhopala vittata	(Fabricius)
		Myochrous denticollis	(Say)
		Omophoita cyanipennis octomaculata	(Crotch)
		Ophraella americana	(Fabricius)
		Ophraella communa	LeSage
		Oulema simulans	(Schaeffer)
		Oulema variabilis	White

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		Pachybrachis atomarius	(Melsheimer)
		Pachybrachis bivittatus	(Say)
		Pachybrachis confusus	Bowditch
		Pachybrachis diversus	Fall
		Pachybrachis haematodes	Suffrian
		Pachybrachis impurus	Suffrian
		Pachybrachis luridus	(Fabricius)
		Pachybrachis nigricornis autolycus	Fall
		Pachybrachis othonus pallidipennis	Suffrian
		Pachybrachis othonus sioux	Balsbaugh
		Pachybrachis parvinotatus	Fall
		Pachybrachis spp.	
		Pachybrachis spumarius	Suffrian
		Pachybrachis vau imperfectus	Fall
		Pachybrachis virgatus	LeConte
		Paria fragariae	Wilcox
		Paria quadriguttata	LeConte
		Paria thoracica	(Melsheimer)
		Phyllecthris gentilis	LeConte
		Phyllotreta pusilla	Horn
		Phyllotreta sp.	
		Rhabdopterus sp.	
		Saxinis knausii	Schaeffer
		Saxinis omogera	Lacordaire
		Spintherophyta globosa	(Olivier)
		Systena dimorpha	Blake
		Systena frontalis	(Fabricius)
		Systena hudsonias	(Forster)
		Trirhabda canadensis	(Kirby)
		Xanthogaleruca luteola	(Muller)
		Xanthonia n. sp.	
		Xanthonia sp.	
		Xanthonia villosula	(Melsheimer)
		Zygogramma disrupta	(Rogers)
		Zygogramma exclamationis	(Fabricius)
		Zygogramma heterothecae	Linell
		Zygogramma suturalis	(Fabricius)

Order	Family	Scientific	Taxonomic Authority
	Cicindelidae		
		Cicindela cleripes	LeConte
		Cicindela cuprascens	LeConte
		Cicindela duodecimguttata	Dejean
		Cicindela hirticollis	Say
		Cicindela obsoleta vulturina	LeConte
		Cicindela ocellata rectilatera	Chaudoir
		Cicindela punctulata	Olivier
		Cicindela repanda	Dejean
		Cicindela rufiventris cumatilis	LeConte
		Cicindela scutellaris	Say
		Cicindela sericea	(Casey)
		Cicindela sexguttata	Fabricius
		Cicindela splendida	Hentz
		Cicindela tenuisignata	LeConte
		Cicindela trifasciata	Fabricius
		Megacephala carolina	(Linnaeus)
		Megacephala virginica	(Linnaeus)
	Coccinellidae		
		Chilocorus stigma	(Say)
		Coccinella septempunctata	Linnaeus
		Coccinella septempunctata	Linnaeus
		Coccinella transversoguttata richardsoni	Brown
		Coleomegilla maculata lengi	Timberlake
		Cycloneda sanguinea	Linnaeus
		Harmonia axyridis	(Pallas)
		Hippodamia convergens	(Guerin-Meneville)
		Hippodamia glacialis	(Fabricius)
		Hippodamia variegata	(Goeze)
		Hyperaspis fimbriolata	Melsheimer
		Hyperaspis undulata	(Say)
		Olla v-nigrum	(Mulsant)
		Psyllobora renifer	Casey
	Dermestidae		
		Anthrenus verbasci	(Linnaeus)
		Dermestes caninus	Gemar
		Dermestes marmoratus	Say

Order	Family	Scientific	Taxonomic Authority
	Dryopidae		
		Helichus sp.	
		Helichus suturalis	LeConte
		Pelonomus obscurus	LeConte
	Dytiscidae		
		Acilius fraternus	Harris
		Agabus disintegratus	(Crotch)
		Agabus semivittatus	LeConte
		Agabus sp.	
		Celina hubbelli	Young
		Copelatus chevrolati renovatus	Guignot
		Copelatus glyphicus	(Say)
		Coptotomus loticus	Hilsenhoff
		Coptotomus venustus	(Say)
		Cybister fimbriolatus	(Say)
		Desmopachria sp.	
		Eretes explicitus	Miller
		Graphoderus liberus	(Say)
		Heterosternuta diversicornis	(Sharp)
		Heterosternuta sp.	
		Hydaticus bimarginatus	(Say)
		Hygrotus acaroides	(LeConte)
		Laccophilus fasciatus rufus	Melsheimer
		Laccophilus fasciatus terminalis	Sharp
		Laccophilus pictus insignis	Sharp
		Laccophilus proximus	Say
		Laccophilus quadrilineatus quadrilineatus	Horn
		Liodessus flavicollis	(LeConte)
		Neobidessus pullus	(LeConte)
		Neoporus dimidiatus	(Gemminger and Harold)
		Neoporus shermani	(Fall)
		Neoporus sp.	
		Neoporus undulatus	(Say)
		Thermonectes ornaticollis	Aube
		Thermonetus basillaris	(Harris)
		Uvarus lacustris	(Say)
		Uvarus texanus	(Sharp)

Order	Family	Scientific	Taxonomic Authority
	Elateridae		
		Aeolus mellillus	(Say)
		Aeolus scutellatus	(Schaeffer)
		Aeolus spp.	
		Aeolus trilineatus	Candeze
		Agriotes insanus	Candeze
		Agrypnus rectangularis	(Say)
		Alaus oculatus	(Linnaeus)
		Ampedus fuscatus	(Melsheimer)
		Ampedus insignis	(LeConte)
		Ampedus sp.	
		Anchastus binus	(Say)
		Anchastus rufus	Candeze
		Anchastus sp.	
		Athous cucullatus	(Say)
		Cardiophorus convexus	(Say)
		Conoderus auritus	(Herbst)
		Conoderus bellus	(Say)
		Conoderus lividus	(DeGeer)
		Conoderus sp.	
		Conoderus vespertinus	(Fabricius)
		Dipropus simplex	(LeConte)
		Esthesopus praeditus	Horn
		Glyphonyx ferruginosus	Schaeffer
		Glyphonyx helix	Smith and Balsbaugh
		Glyphonyx sp.	
		Glyphonyx testaceus	(Melsheimer)
		Hadromorphus inflatus	(Say)
		Hemicrepidius hemipodus	Say
		Hemicrepidius memnonius	(Herbst)
		Hemirhipus fascicularis	(Fabricius)
		Lacon impressicollis	(Say)
		Lacon marmorata	(Fabricius)
		Lanelater hayekae	Spilman
		Limonius auripilis	(Say)
		Megapenthes angularis	LeConte
		Megapenthes insignis	(LeConte)
		Megapenthes rufilabris	(Germar)
		Melanactes piceus	(DeGeer)

Order	Family	Scientific	Taxonomic Authority
		Melanactes puncticollis	(LeConte)
		Melanotus communis	(Gyllenhal)
		Melanotus cribulosus	(LeConte)
		Melanotus decumanus	(Erichson)
		Melanotus emissus	(LeConte)
		Melanotus emissus	(LeConte)
		Melanotus hyslopi	Van Zwaluwenberg
		Melanotus opacicollis	(LeConte)
		Melanotus similis	(Kirby)
		Melanotus sp.	
		Melanotus testaceus	(Melsheimer)
		Melanotus trapezoideus	(LeConte)
		Melanotus verberans	(LeConte)
		Meristhus cristatus	Horn
		Neotrichophorus carolinensis	Schaeffer
		Neotrichophorus texanus	(LeConte)
		Orthostethus infuscatus	(Germar)
		Paradonus pectoralis	(Say)
		Rismethus scobinula	(Candeze)
		Scaptolenus lecontei	Salle
		Selonodon speratus	(Fall)
	Elmidae		
		Stenelmis cheryl	Brown
		Stenelmis occidentalis	Schmude & Brown
		Stenelmis sexlineata	Sanderson
		Stenelmis sp.	
	Geotrupidae		
		Bolbocerosoma pusillum	Dawson and McCollock
		Geotrupes opacus	Haldeman
	Gyrinidae		
		Dineutus assimilis	Kirby
		Dineutus ciliatus	(Forsberg)
		Dineutus horni	Roberts
		Gyretes compressus	LeConte
		Gyrinus parcus	Say
		Gyrinus woodruffi	Fall

Order	Family	Scientific	Taxonomic Authority
	Haliplidae		
		Haliplus deceptus	Matheson
		Haliplus fasciatus	Aube
		Haliplus lewisii	Crotch
		Haliplus tortilipenis	Brigham and Sanderson
		Haliplus triopsis	Say
		Peltodytes duodecimpunctatus	(Say)
		Peltodytes litoralis	Matheson
		Peltodytes sexmaculatus	Roberts
	Helophoridae		
		Helophorus linearis	(LeConte).
	Hybosoridae		
		Hybosorus illigeri	Reiche
	Hydrophilidae		
		Berosus exiguus	(Say)
		Berosus infuscatus	LeConte
		Berosus miles	LeConte
		Berosus peregrinus	(Herbst)
		Berosus stylifer	Horn
		Chaetarthria bicolor	Sharp
		Chaetarthria sp.	
		Crenitis sp.	
		Cymbiodyta beckeri	Smetana
		Cymbiodyta sp.	
		Dibolocelus ovatus	(Gemminger and Harold)
		Enochrus cinctus	(Say)
		Enochrus hamiltoni	(Horn)
		Enochrus ochraceus	(Melsheimer)
		Enochrus pygmaeus	(Fabricius)
		Enochrus sayi	Gunderson
		Epimetopus sp.	
		Helochares maculicollis	Mulsant
		Hydrochara leechi	Smetana
		Hydrochara occulta	(d'Orchymont)
		Hydrochara soror	Smetana
		Hydrochara spangleri	Smetana
		Hydrochus sp.	
		Hydrophilus triangularis	Say

Order	Family	Scientific	Taxonomic Authority
		Hydrovatus pustulatus	(Melsheimer)
		Laccobius minutoides	Orchymont
		Laccobius teneralis	Cheary
		Paracymus confusus	Wooldridge
		Paracymus sp.	
		Tropisternus blatchleyi	Orchymont
		Tropisternus collaris	(Fabricius)
		Tropisternus ellipticus	(LeConte)
		Tropisternus lateralis nimbatus	(Say)
		Tropisternus natator	d'Orchymont
	Meloidae		
		Epicauta albida	(Say)
		Epicauta atrata	(Fabricius)
		Epicauta brunnea	Werner
		Epicauta callosa	LeConte
		Epicauta confertus	(Say)
		Epicauta fabricii	(LeConte)
		Epicauta ferruginea	(Say)
		Epicauta funebris	Horn
		Epicauta immaculata	(Say)
		Epicauta mimetica	(Horn)
		Epicauta murina	(LeConte)
		Epicauta nigritarsis	(LeConte)
		Epicauta occidentalis	Werner
		Epicauta pensylvanica	(DeGeer)
		Epicauta sericans	LeConte
		Nemognatha lurida	LeConte
		Nemognatha piazata	(Fabricius)
		Nemognatha sparsa	LeConte
		Pyrota concinna	Casey
		Pyrota deceptiva	Selander
		Pyrota lineata texana	(Olivier)
		Pyrota perversa	Dillon
		Zonitis sayi	Wickham
	Noteridae		
		Hydrocanthus atripennis	Say

Order	Family	Scientific	Taxonomic Authority
	Ochodaeidae		
		Ochodaeus biarmatus	LeConte
	Scarabaeidae		
		Anomala flavipennis	Burmeister
		Anomala innuba	(Fabricius)
		Anomala marginata	(Fabricius)
		Anomola binotata	(Gyllenhal)
		Aphodius pseudolividus	Balthasar
		Aphodius rubeolus	Beauvois
		Aphodius rusicola	Melsheimer
		Ataenius cognata	(LeConte)
		Ataenius figurator	Harold
		Ataenius gracilis	(Melsheimer)
		Ataenius hesperius	Cartwright
		Ataenius inquisitus	Horn
		Ataenius platensis	(Blanchard)
		Ataenius spretulus	(Haldeman)
		Ataenius strigatus	(Say)
		Ateuchus histeroides	Weber
		Canthon (Melanocanthon) nigricornis	(Say)
		Canthon perplexus	LeConte
		Canthon pilularium	(Linnaeus)
		Canthon viridis	(Beauvois)
		Cotinis nitidus	(Linnaeus)
		Cyclocephala hirta	LeConte
		Cyclocephala melanocephala	(Fabricius)
		Diplotaxis frondicola	(Say)
		Diplotaxis harperi	Blanchard
		Diplotaxis maura	Fall
		Diplotaxis truncatula	LeConte
		Dyscinetus morator	(Fabricius)
		Euetheola humilis	(Burmeister)
		Euphoria kerni	Haldeman
		Euphoria sepulcralis	(Fabricius)
		Ligyrus gibbosus	(DeGeer)
		Martineziella dutertrei	(Chalumeau)

Order	Family	Scientific	Taxonomic Authority
		Onthophagus gazella	(Fabricius)
		Onthophagus hecate	(Panzer)
		Onthophagus orpheus	(Panzer)
		Onthophagus pennsylvanicus	Harold
		Onthophagus velutinus	Horn
		Parastasia brevipes	(LeConte)
		Pelidnota punctatus	(Fabricius)
		Phanaeus vindex	MacLeay
		Phileurus valgus	(Linnaeus)
		Phyllophaga calceata	(LeConte)
		Phyllophaga crenulata	(Froelich)
		Phyllophaga cribrosa	(LeConte)
		Phyllophaga crinita	(Burmeister)
		Phyllophaga forbesi	Glasgow
		Phyllophaga futilis	(LeConte)
		Phyllophaga lanceolata	(Say)
		Phyllophaga rubiginosa	(LeConte)
		Phyllophaga submucida	(LeConte)
		Phyllophaga torta	(LeConte)
		Platytomus longulus	(Cartwright)
		Polyphylla hammondi	LeConte
		Serica campestris	Dawson
		Strigoderma arbicola	(Fabricius)
		Trichiotinus texanus	(Horn)
		Trigonopeltastes delta	(Forster)
	Silphidae		
		Necrodes surinamensis	(Fabricius)
		Nicrophorus orbicollis	Say
		Nicrophorus pustulatus	Hersch
		Oiceoptoma inaequalis	(Fabricius)
		Thanatophilus truncatus	(Say)
	Trogidae		
		Trox robinsoni	Vaurie
		Trox spinulosus	Robinson
		Trox suberosus	Fabricius
		Trox variolatus	Melsheimer

Order	Family	Scientific	Taxonomic Authority
Diptera			
	Asilidae		
		Asilus sp.	
		Atomosia melanopogon	Hermann
		Atomosia puella	(Wiedemann)
		Atomosia sayii	Johnson
		Atomosia tibialis	(Hull)
		Cerotainiops abdominalis	(Brown)
		Cophura bella	(Loew)
		Dicropaltum mesae	(Tucker)
		Diogmites angustipennis	Loew
		Diogmites neoternatus	(Bromley)
		Diogmites symmachus	Loew
		Efferia aestuans	(Linnaeus)
		Efferia albibarbis	(Macquart)
		Efferia helenae	(Bromley)
		Efferia kelloggi	Wilcox
		Efferia monki	(Bromley)
		Efferia nemoralis	(Hine)
		Efferia plena	(Hine)
		Efferia subpilosus	(Schaeffer)
		Efferia texana	(Banks)
		Efferia tuberculatus	(Coquillett)
		Haplopogon latus	(Coquillett)
		Heteropogon lautus	Loew
		Holopogon snowi	Back
		Lampria bicolor	(Wiedemann)
		Lampria rubriventris	(Macquart)
		Laphria flavicollis	Say
		Laphria macquarti	(Banks)
		Leptogaster murinus	Loew
		Machimus sp.	
		Microstylum morosum	Loew
		Neoitamus orphne	(Walker)
		Ommatius ouachitensis	Bullington and Lavigne
		Ommatius tibialis	Say
		Ospriocercus abdominalis	Say
		Ospriocercus latipennis	(Loew)
		Ospriocercus rhadamanthus	Loew

Order	Family	Scientific	Taxonomic Authority
		Ospriocerus longulus	(Loew)
		Philonicus limpidipennis	(Hine)
		Philonicus sp.	
		Proctacanthella leucopogon	(Williston)
		Proctacanthus cacopilogus	(Hine)
		Proctacanthus hinei	Bromley
		Proctacanthus milbertii	Macquart
		Proctacanthus rodecki	James
		Prolepsis tristis	(Walker)
		Promachus bastardii	(Macquart)
		Promachus dimidiatus	Curran
		Promachus fitchii	Osten Sacken
		Promachus hinei	Bromley
		Psilocurus birdi	Curran
		Psilocurus nudiusculus	Loew
		Saropogon dispar	Coquillett
		Stenopogon helvolus	(Loew)
		Stichopogon trifasciatus	(Say)
		Triola interruptus	(Macquart)
	Calliphoridae		
		Calliphora coloradensis	Hough
		Cochliomyia macellaria	(Fabricius)
		Lucilia coeruleiviridis	Macquart
		Lucilia cuprina	(Wiedemann)
		Lucilia mexicana	Macquart
		Phormia regina	(Meigen)
	Culicidae		
		Aedes vexans	(Meigen)
		Anopheles crucians	Wiedemann
		Anopheles punctipennis	(Say)
		Coquillettidia perturbans	(Walker)
		Culex erraticus	(Dyar and Knab)
		Culex quinquefasciatus	Say
		Culex restuans	Theobald
		Culex salinarius	Coquillett
		Culex sp.	
		Culex tarsalis	Coquillett

Order	Family	Scientific	Taxonomic Authority
		Ochlerotatus canadensis canadensis	(Theobald)
		Ochlerotatus epactius	(Dyar and Knab)
		Ochlerotatus hendersoni	(Cockerell)
		Ochlerotatus nigromaculis	(Ludlow)
		Ochlerotatus sollicitans	(Walker)
		Ochlerotatus thelcter	(Dyar)
		Ochlerotatus triseriatus	(Say)
		Ochlerotatus trivittatus	(Coquillett)
		Psorophora ciliata	(Fabricius)
		Psorophora columbiae	(Dyar and Knab)
		Psorophora cyanescens	(Coquillett)
		Psorophora discolor	(Coquillett)
		Psorophora sp.	
	Mydidae		
		Mydas chrysostomas	Osten Sacken
		Mydas clavatus	(Drury)
	Stratiomyidae		
		Hedriodiscus sp.	
		Hedriodiscus vertebratus	(Say)
		Hermetia aurata	Bellardi
		Hoplitimyia constans	(Loew)
		Myxosargus texensis	Curran
		Nemotelus glaber	Loew
		Nemotelus variabilis	Hanson
		Odontomyia cincta	Olivier
		Orthonevra nitida	(Wiedemann)
		Psellidotus fulvicornis	(Curran)
		Psellidotus sp.	
		Ptecticus trivittatus	(Say)
		Sargus cupratius	(Linnaeus)
		Stratiomyia sp.	
	Syrphidae		
		Allograpta exoticus	(Wiedemann)
		Allograpta obliqua	(Say)
		Chalcosyrphus metallica	Wiedemann
		Chrysogaster antitheus	Walker
		Copestylum vittatum	Thompson

Order	Family	Scientific	Taxonomic Authority
		Eristalis stipator	Osten Sacken
		Helophilus latifrons	Loew
		Mallota bautias	(Walker)
		Mesograpta marginata	(Say)
		Microdon baliopterus	Loew
		Microdon laetus	Loew
		Microdon rufipes	Macquart
		Ocyptamus fuscipennis	(Say)
		Palpada agrorum	(Fabricius)
		Palpada alhambra	Hull
		Palpada vinetorum	(Fabricius)
		Paragus haemorrhous	Meigen
		Platycheirus quadrata	(Say)
		Pseudodoros clavatus	(Fabricius)
		Spaerophoria contigua	Macquart
		Spilomyia longicornis	Loew
		Syritta pipiens	(Linnaeus)
		Toxomerus marginatus	(Say)
	Tabanidae		
		Anacimas dodgei	(Whitney)
		Chlorotabanus crepuscularis	(Bequaert)
		Chrysops callidus	Osten Sacken
		Chrysops flavidus	Wiedemann
		Chrysops pikei	Whitney
		Chrysops sequax	Williston
		Esenbeckia incisuralus	(Say)
		Hybomitra lasiophthalmus	(Macquart)
		Tabanus abactor	Philip
		Tabanus atratus	Fabricius
		Tabanus cymatophorus	Osten Sacken
		Tabanus dorsifer	Walker
		Tabanus equalis	Hine
		Tabanus mularis	Stone
		Tabanus rufofrator	Walker
		Tabanus stygius	Say
		Tabanus sublongus	Bellardi
		Tabanus subsimilus	Bellardi
		Tabanus sulcifrons	Macquart

Order	Family	Scientific	Taxonomic Authority
		Tabanus trimaculatus	Beauvois
Ephemeroptera			
	Baetidae		
		Baetis intercalaris	McDunnough
		Callibaetis floridanus	Banks
		Callibaetis montanus	Eaton
		Callibaetis sp.	
		Fallceon quilleri	(Dodds)
		Plauditus dubius	(Walsh)
		Plauditus texanus	Wiersema
		Procloeon sp	
		Pseudocloeon dardanum	(McDunnough)
		Pseudocloeon ephippiatus	(Traver)
	Caenidae		
		Brachycercus lacustris	(Needham)
		Caenis amica	Hagen
		Caenis latipennis	Banks
		Caenis punctata	McDunnough
	Ephemeridae		
		Hexagenia limbata	(Serville)
	Heptageniidae		
		Stenonema femorata	(Say)
	Isonychiidae		
		Isonychia rufa	McDunnough
	Leptohyphidae		
		Tricorythodes minutus	Traver
		Tricorythodes sp.	
	Leptophlebiidae		
		Neochoroterpes oklahoma	(Traver)
	Polymitarcyidae		
		Tortopus puella	(Pictet)
Heteroptera			
	Belostomatidae		
		Belostoma fluminea	Say
	Corixidae		
		Corisella edulis	(Champion)

Order	Family	Scientific	Taxonomic Authority
		Hesperocorixa obliqua	(Hungerford)
		Morphocorixa compacta	(Hungerford)
		Palmacorixa nana walleyi	Hungerford
		Sigara alternata	(Say)
		Sigara modesta	(Abbott)
		Trichocorixa calva	(Say)
		Trichocorixa kanza	Sailer
	Gelastocoridae		
		Gelastocoris oculata	(Fabricius)
	Gerridae		
		Gerris marginatus	Say
		Gerris remigis	Say
		Gerris sp.	
		Limnoporus canaliculatus	(Say)
		Neogerris hesione	(Kirkaldy)
		Trepobates knighti	Drake and Harris
		Trepobates subnitidus	Esaki
	Hydrometridae		
		Hydrometra martini	Kirkaldy
	Mesoveliidae		
		Mesovelia mulsanti	White
	Nepidae		
		Ranatra nigra	Herrich-Schaffer
	Notonectidae		
		Buenoa confusa	Truxal
		Buenoa margaritacea	Torre-Bueno
		Buenoa scimitra	Bare
		Buenoa sp.	
		Notonecta indica	Linnaeus
		Notonecta undulata	Say
	Pentatomidae		
		Acrosternum hilaris	(Say)
		Amaurochrous cinctipes	(Say)
		Andrallus spinidens	(Fabricius)
		Apateticus cynicus	(Say)
		Banasa calva	(Say)
		Banasa euchlora	Stål

Order	Family	Scientific	Taxonomic Authority
		Brochymena arborea	(Say)
		Brochymena cariosa	Stål
		Brochymena quadripustulatus	(Fabricius)
		Chlorochroa persimilis	Horvath
		Euschistus ictericus	Linnaeus
		Euschistus servus	(Say)
		Euschistus tristigmus	(Say)
		Euschistus variolarius	(Palisot)
		Holcostethus abbreviatus	Uhler
		Holcostethus limbolarius	(Stål)
		Mecidea major	Sailer
		Menecles inserta	(Say)
		Mormidea lugens	(Fabricius)
		Murgantia histrionica	(Hahn)
		Oebalus pugnax	(Fabricius)
		Podisus maculiventris	(Say)
		Prionosoma podopioides	Uhler
		Stiretrus anchorago	(Fabricius)
		Thyanta custator	(Fabricius)
		Trichopepla semivittata	(Say)
	Pleidae		
		Neoplea striola	(Fieber)
	Saldidae		
		Saldula confluenta	(Say)
	Veliidae		
		Microvelia paludicola	Champion
		Microvelia sp.	
		Rhagovelia choreutes	Hussey
		Rhagovelia knighti	Drake and Harris
Homoptera			
	Cicadidae		
		Beameria venosa	(Uhler)
		Cicadetta calliope	(Walker)
		Cicadetta kansa	(Davis)
		Diceroprocta azteca	(Kirkaldy)
		Magicicada cassinii	(Fisher)
		Neocicada hieroglyphica	(Say)

Order	Family	Scientific	Taxonomic Authority
		Pacarina puella	Davis
		Tibicen aurifera	(Say)
		Tibicen dealbata	(Davis)
		Tibicen dorsata	(Say)
		Tibicen lyricen	(DeGeer)
		Tibicen pruinosa	(Say)
		Tibicen superba	(Fitch)
Hymenoptera			
	Andrenidae		
		Andrena sp. 1	
		Andrena sp. 2	
		Andrena sp. 3	
		Andrena sp. 4	
		Andrena sp. 5	
		Andrena sp. 6	
		Protandrena sp.	
		Pseudopanurgus sp.	
	Anthophoridae		
		Anthophora bomboides	Kirby
		Anthophora walshii	Cresson
		Centris lanosa	Cresson
		Ceratina sp.	
		Epeoloides sp.	
		Ericrocis lata	(Cresson)
		Melissodes sp. 1	
		Melissodes sp. 2	
		Savstra obliqua	(Say)
		Triepeolus sp.	
		Triopasites sp.	
		Xylocopa virginica	(Linnaeus)
	Apidae		
		Apis mellifera	Linnaeus
		Bombus affinis	Cresson
		Bombus appositus	Cresson
		Bombus fraternus	(Smith)
		Bombus pensylvanica	(DeGeer)

Order	Family	Scientific	Taxonomic Authority
	Argidae		
		Arge humeralis	(Beauvois)
		Sphacophilus sp. 1	
		Sphacophilus sp. 2	
		Sphacophilus sp. 3	
	Braconidae		
		Agathis sp. 1	
		Agathis sp. 2	
		Agathis sp. 3	
		Aleiodes sp. 1	
		Aleiodes sp. 2	
		Aleiodes sp. 3	
		Apanteles sp.	
		Bracon sp. 1	
		Bracon sp. 2	
		Cardiochiles explorator	(Say)
		Cardiochiles viator	(Say)
		Chelonus sp.	
		Cyanopterus sp.	
		Digonogastra sp.	
		Doryctes sp.	
		Homolobus sp.	
		Microplitis sp.	
		Vipio sp.	
		Vipio vulgaris	(Cresson)
	Cimbicidae		
		Cimbex americana	Leach
	Colletidae		
		Colletes sp.	
		Hylaeus sp.	
	Formicidae		
		Aphaenogaster tenneseensis	(Mayr)
		Camponotus americanus	Mayr
		Camponotus castaneus	(Latreille)
		Camponotus nearcticus	Emery
		Camponotus pennsylvanicus	(DeGeer)
		Crematogaster laeviuscula	Mayr
		Crematogaster lineolata	(Say)

Order	Family	Scientific	Taxonomic Authority
		Crematogaster punctulata	Emery
		Dorymyrmex flavus	McCook
		Forelius mccooki	(McCook)
		Forelius pruinosus	(Roger)
		Formica pallidefulva	Latreille
		Formica sp.	
		Lasius neoniger	Emery
		Linepithema humilis	(Mayr)
		Monomorium minima	(Buckley)
		Neivamyrmex nigrescens	(Cresson)
		Neivamyrmex sp.	
		Paratrechina parvula	(Mayr)
		Pheidole hyatti	Emery
		Pheidole sp.	
		Pogonomyrmex barbata	(Smith)
		Pogonomyrmex comanche	Wheeler
		Prenolepis imparis	(Say)
		Solenopsis geminata	(Fabricius)
		Tapinoma sessilis	(Say)
		Trachymyrmex septentrionalis	(McCook)
	Halictidae		
		Agapostemon texanus	(Cresson)
		Augochlora purus	(Say)
		Augochlorella sp.	
		Augochloropsis metallica	(Fabricius)
		Dieunomia heteropoda kirbii	(Smith)
		Halictus confusus	Smith
		Halictus ligatus	Say
		Lasioglossum sp. 1	
		Lasioglossum sp. 2	
		Lasioglossum sp. 3	
		Lasioglossum sp. 4	
		Lasioglossum sp. 5	
		Nomia nortoni	Cresson
	Ichneumonidae		
		Agrypon sp.	
		Arbelus sp.	

Order	Family	Scientific	Taxonomic Authority
		Astiphromma sp.	
		Baryceros fortis	(Cresson)
		Barytarbes sp.	
		Campopleginae	
		Campoplex sp.	
		Catadelphus sp.	
		Compsocryptus texensis	Townes
		Conocalama rileyi	(Cresson)
		Cratichneumon sp.	
		Cremastinae	
		Cremastus sp.	
		Cteniscus sp.	
		Ctenopelmatinae	
		Dusona sp. 1	
		Dusona sp. 2	
		Enicospilus americanus	(Christ)
		Enicospilus merdarius	(Gravenhorst)
		Enicospilus sp.	
		Erigorgus sp.	
		Exyston sp.	
		Glypta sp.	
		Habronyx sp.	
		Hadrodactylus sp.	
		Hemitelini	
		Itoplectis conquisitor	(Say)
		Megarhyssa atratus	(Fabricius)
		Melanichneumon sp.	
		Mesochorus sp.	
		Mesostenus longicaudis	Cresson
		Netelia sp.	
		Ophion bilineatus	Say
		Platylabus sp.	
		Triclistus propinquus	(Cresson)
		Trieces sp.	
		Trychosis montivagus	(Provancher)
		Trychosis sp.	
	Leucospididae		
		Leucospis sp.	

Order	Family	Scientific	Taxonomic Authority
	Megachilidae		
		Coelioxys sp.	
		Dianthidium curvatum	(Smith)
		Hoplitis producta	(Cresson)
		Lithurge apicalis	(Cresson)
		Megachile sp. 1	
		Megachile sp. 2	
	Mutillidae		
		Acanthophotopsis sp.	
		Dasymutilla atrifimbriata	Mickel
		Dasymutilla bioculata	(Cresson)
		Dasymutilla bollii	(Fox)
		Dasymutilla clotho	(Blake)
		Dasymutilla creusa	(Cresson)
		Dasymutilla electra	(Blake)
		Dasymutilla gorgon	(Blake)
		Dasymutilla klugii	(Gray)
		Dasymutilla leda	(Blake)
		Dasymutilla macra	(Cresson)
		Dasymutilla magnifica	Mickel
		Dasymutilla medea	(Cresson)
		Dasymutilla nitidula	Mickel
		Dasymutilla occidentalis	(Linnaeus)
		Dasymutilla quadriguttata	(Say)
		Dasymutilla scaevola	(Blake)
		Dasymutilla vandala	Mickel
		Dasymutilla vesta	(Cresson)
		Dasymutilla vestita	(Lepeletier)
		Dasymutilla waco	(Blake)
		Dasymutilla zelaya	(Blake)
		Myrmilloides grandiceps	(Blake)
		Odontophotopsis sp.	
		Photomorphus sp.	
		Pseudomethoca oceola	(Blake)
		Pseudomethoca propinqua	(Cresson)
		Spaeropthalma boweri	Schuster
		Sphaeropthalma auripilis	(Blake)

Order	Family	Scientific	Taxonomic Authority
		Sphaeropthalma imperialiformis	(Viereck)
		Sphaeropthalminae sp.	
		Timulla dubitata	(Smith)
		Timulla oajaca	(Blake)
		Timulla rufosignata	(Bradley)
		Timulla vagans	(Fabricius)
	Orussidae		
		Orussus sayii	(Westwood)
	Pergidae		
		Acordulecera sp.	
	Pompilidae		
		Anoplius americanus	(Beauvois)
		Anoplius cleora	(Banks)
		Anoplius lepidus atramentarius	(Dahlbom)
		Aporinellus fasciatus	(Smith)
		Dipogon papago anomalus	Dreisbach
		Entypus fulvicornis	(Cresson)
		Entypus texanus	(Cresson)
		Pepsis mildei	Stål
		Pepsis thisbe	Lucas
		Phanagenia bombycinus	(Cresson)
		Poecilopompilus interrupta	(Say)
	Scoliidae		
		Campsomeris plumipes	(Drury)
		Trielis octomaculata	(Say)
	Sphecidae		
		Ammophila cleopatra	Menke
		Ammophila juncea	Cresson
		Ammophila pictipennis	Walsh
		Ammophila procera	Dahlbom
		Ammophila strenua	Cresson
		Ammophila urnalia	Dahlbom
		Astata bechteli	Parker
		Astata unicolor	Say
		Bicyrtes quadrifasciata	(Say)
		Bicyrtes quadrifasciata	(Say)
		Cerceris bicornuta	Guerin-Meneville

Order	Family	Scientific	Taxonomic Authority
		Cerceris compacta	Cresson
		Cerceris fumipennis	Say
		Chalybion californicus	(Saussure)
		Ectemnius decemmaculatus	(Say)
		Ectemnius stirpicola	(Packard)
		Eremnophila aureonotata	(Cameron)
		Fernaldina lucae	Saussure
		Glenostictia pictifrons	(Smith)
		Isodontia auripes	(Fernald)
		Isodontia philadelphica	(Lepeletier)
		Larra analis	Fabricius
		Palmodes dimidiatus	(DeGeer)
		Philanthus gibbosus	(Fabricius)
		Podalonia robusta	(Cresson)
		Podium luctuosum	Smith
		Prionyx atrata	(Lepeletier)
		Solierella plenoculoides	(Fox)
		Sphecius speciosus	(Drury)
		Sphex habena	Say
		Sphex ichneumonea	(Linnaeus)
		Sphex texana	Cresson
		Tachytes distinctus	Smith
		Tachytes pennsylvanicus	Banks
		Trypoxylon clavatum	Say
		Trypoxylon politum	Say
		Trypoxylon texense	Saussure
		Zanysson texanus	(Cresson)
	Tenthredinidae		
		Eutomostethus luteiventris	(Klug)
		Lycaota sodalis	(Cresson)
		Nematus sp.	
		Taxonus epicera	(Say)
		Zaschizonyx montana	(Cresson)
	Tiphiidae		
		Myzinum quinquecincta	(Fabricius)
		Tiphia sp.	

Order	Family	Scientific	Taxonomic Authority
	Torymidae		
		Torymidae	
	Vespidae		
		Ancistrocerus catskill	(Saussure)
		Eumenes bollii	Cresson
		Eumenes fraterna	Say
		Eumenes smithii	Saussure
		Eumenes sp.	
		Euodynerus annulatus arvensis	(Saussure)
		Euodynerus castigatus	(Saussure)
		Euodynerus crypticus	(Say)
		Euodynerus foraminatus	(Saussure)
		Euodynerus megaera	(Lepeletier)
		Euodynerus pratensis	(Saussure)
		Euodynerus sp.	
		Manobia quadridens	(Linnaeus)
		Parancistrocerus pedestris	(Saussure)
		Polistes carolina	(Linnaeus)
		Polistes fuscata	(Fabricius)
		Polistes metrica	Say
		Pseudodynerus quadrisectus	(Say)
		Stenodynerus anormis	(Say)
		Stenodynerus histrionalis	(Robertson)
		Stenodynerus microstictus	(Viereck)
		Symmorphus canadensis	(Saussure)
Lepidoptera			
	Arctiidae		
		Apantesis nais	(Drury)
		Apantesis phalerata	(Harris)
		Apantesis vittata	(Fabricius)
		Cisseps fulvicollis	(Hübner)
		Cisthene tenuifascia	Harvey
		Cisthene unifascia	Grote & Robinson
		Cycnia oregonensis	(Stretch)
		Cycnia sp.	
		Cycnia tenera	Hübner
		Estigmene acrea	(Drury)
		Euerythra phasma	Harvey

Order	Family	Scientific	Taxonomic Authority
		Grammia arge	(Drury)
		Grammia figurata	(Drury)
		Grammia oithona	(Strecker)
		Grammia parthenice	(Kirby)
		Haploa clymene	(Brown)
		Haploa reversa	(Stretch)
		Holomelina aurantiaca	(Hübner)
		Holomelina costata	(Stretch)
		Hyphantria cunea	(Drury)
		Hypoprepia fuscosa	Hübner
		Hypoprepia miniata	(Kirby)
		Lycomorpha pholus	(Drury)
		Spilosoma congrua	(Walker)
		Spilosoma dubia	(Walker)
		Spilosoma virginica	(Fabricius)
	Geometridae		
		?Ectropis unidentified species	
		Anavitrinella atristrigaria	(Barnes and McDunnough)
		Ancamptodes dataria	(Grote)
		Archirhoe neomexicana	(Hulst)
		Cabera quadrifasciaria	(Packard)
		Chlorochlamys chloroleucaria	(Guenée)
		Costaconvexa centrostrigaria	(Wollasten)
		Cyclophora nanaria	(Walker)
		Digrammia ?pervolata	(Hulst)
		Digrammia continuata	(Walker)
		Digrammia excurvata	(Packard)
		Digrammia gnophosaria	(Guenée)
		Digrammia irrorata	(Packard)
		Digrammia ocellinata	(Guenée)
		Digrammia ordinata	(Walker)
		Digrammia pallidata	(Packard)
		Digrammia subminiata	(Packard)
		Euacidalia sericearia	Packard
		Eubaphe mendica	(Walker)
		Eubaphe unicolor	(Robinson)
		Euchlaena effecta	(Walker)
		Euchlaena johnsonaria	(Fitch)

Order	Family	Scientific	Taxonomic Authority
		Euchlaena madusaria	(Walker)
		Euchlaena obtusaria	(Hübner)
		Euchlaena pectinaria	Denis & Schiffermüller
		Euchlaena tigrinaria	(Guenée)
		Euchlaena ~~unidentified species~~.	
		Eulithis gracilineata	(Guenée)
		Eumacaria latiferrugata	(Walker)
		Eupithecia bolteri	Hulst
		Eupithecia jejunata	McDunnough
		Eupithecia miserulata	Grote
		Eupithecia swettii	Grossbeck
		Eupithecia tenuata	Hulst
		Eusarca packardaria	(McDunnough)
		Eusarca subflavaria	(Pearsall)
		Exelis pyrolaria	Guenée
		Haematopis grataria	(Fabricius)
		Hammaptera parinotata	(Zeller)
		Hydrelia unidentified species	
		Hydriomena pluviata	(Guenée)
		Hypagyrtis unipunctata	(Haworth)
		Hypomecis gnopharia	(Guenée)
		Hypomecis unidentified species.	
		Idaea demissaria	(Hübner)
		Idaea sp. nr. productata	(Packard)
		Iridopsis perfectaria	(McDunnough)
		Isturgia dislocaria	(Packard)
		Leptostales rubromarginaria	(Packard)
		Lobocleta ossularia	(Geyer)
		Lobocleta plemyraria	(Guenée)
		Lychnosea intermicata	(Walker)
		Lycia ypsilon	(Forbes)
		Lytrosis unitaria	(Herrich-Schäffer)
		Macaria aemulataria	Walker
		Macaria coortaria?	(Hulst)
		Macaria promiscuata	(Ferguson)
		Macaria punctolineata	Packard
		Macaria ribearia	Fitch
		Macaria unidentified species	

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		Melanolophia signataria	(Walker)
		Melilla xanthometata	(Walker)
		Metanema inatomaria	Guenée
		Nacophora quernaria	(J.E. Smith)
		Narraga fimetaria	(Grote & Robinson)
		Nematocampa limbata	(Haw.)
		Orthonama obstipata	(Fabricius)
		Paleacrita vernata	(Peck)
		Pimaphera sparsaria	(Walker)
		Prionomelia spododea	(Hulst)
		Probole amicaria	(Herrich-Schäffer)
		Prochoerodes lineola	(Goeze)
		Protoboarmia porcelaria	(Guenee)
		Scopula ancellata	(Hulst)
		Scopula inductata	(Guenée)
		Scopula limboundata	(Haworth)
		Semiothisa cyda	(Druce)
		Synchlora aerata	(Fabricius)
		Timandra amaturaria	(Walker)
		Tornos scolopacinaria	(Guenée)
	Hesperiidae		
		Amblyscirtes aenus	W.H. Edwards
		Amblyscirtes belli	H.A. Freeman
		Amblyscirtes eos	(W.H. Edwards)
		Amblyscirtes vialis	(W.H. Edwards)
		Anatrytone logan	(W.H. Edwards)
		Ancyloxipha numitor	(Fabricius)
		Atalopedes campestris	(Boisduval)
		Atrytone arogos	(Boisduval & LeConte)
		Celotes nessus	(W.H. Edwards)
		Copaeodes aurantiaca	(Hewitson)
		Epargyreus clarus	(Cramer)
		Erynnis baptiseae	(Forbes)
		Erynnis funeralis	(Scudder & Burgess)
		Erynnis horatius	(Scudder & Burgess)
		Erynnis juvenalis	(Fabricius)
		Euphyes dion	(W.H. Edwards)
		Euphyes vestris	(Boisduval)

Order	Family	Scientific	Taxonomic Authority
		Hylephila phyleus	(Drury)
		Lerodea eufala	(W.H. Edwards)
		Pholisora catullus	(Fabricius)
		Poanes zabulon	(Boisduval & LeConte)
		Pyrgus communis	\(Grote)
		Staphylus hayhurstii	(W.H. Edwards)
		Thorybes bathyllus	(J.E. Smith)
		Wallengrenia otho	(J.E. Smith)
	Lycaenidae		
		Atlides halesus	(Cramer)
		Callophrys gryneus	(Hübner)
		Calycopis cecrops	(Fabricius)
		Cupido comyntas	(Godart)
		Echinargus isola	(Reakirt)
		Lycaena dione	(Scudder)
		Phaeostrymon alcestis	(W.H. Edwards)
		Satyium titus	(Fabricius)
		Satyrium calanus	(Hübner)
		Satyrium favonius	(J.E. Smith)
		Strymon melinus	(Hübner)
	Noctuiidae		
		Catocala abbreviatella	Grote
		Catocala amatrix	(Hübner)
		Catocala amestris	Strecker
		Catocala amica	(Hübner)
		Catocala coccinata	Grote
		Catocala delilah	Strecker
		Catocala herodias	Strecker
		Catocala ilia	(Cramer)
		Catocala illecta	Walker
		Catocala innubens	Guenée
		Catocala maestosa	Hulst
		Catocala micronympha	Guenée
		Catocala minuta	Edwards
		Catocala muliercula	Guenée
		Catocala nuptialis	Walker
		Catocala piatrix	Grote

Order	Family	Scientific	Taxonomic Authority
		Catocala similis	Hy. Edwards
		Catocala sp.	
		Catocala ultronia	(Hübner)
		Melaporphyria immortua	Grote
		Schinia alencis	(Harvey)
		Schinia arcigera	(Guenée)
		Schinia chrysella	(Grote)
		Schinia citrinella	(Grote & Robinson)
		Schinia cupes	(Grote)
		Schinia gaurae	(Smith)
		Schinia gracilenta	Hübner
		Schinia jaguarina	(Guenée)
		Schinia lynx	(Guenée)
		Schinia mortua	(Grote)
		Schinia obscurata	Strecker
		Schinia rivulosa	(Guenée)
		Schinia saturata	(Grote)
		Schinia snowi	(Grote)
		Schinia trifascia	(Hübner)
		Schinia volupia	(Fitch)
	Notodontidae		
		Cerura candida	Lintner
		Clostera apicalis	(Walker)
		Dasylophia anguina	(Smith)
		Datana angusii	Grote & Robinson
		Datana perspicua	Grote & Robinson
		Furcula cinerea	(Lintner)
		Gluphisia lintneri	(Grote)
		Gluphisia septentrionis	Walker
		Heterocampa guttivitta	(Walker)
		Heterocampa obliqua	Packard
		Heterocampa subrotata	Harvey
		Heterocampa umbrata	Walker
		Hippia packardii	(Morrison)
		Hyparpax venus	Neumoegen
		Hyperaeschra tortuosa	Tepper
		Litodonta hydromeli	Harvey
		Lochmaeus bilineata	(Packard)

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		Nadata gibbosa	(Smith)
		Nerice bidentata	Walker
		Oligocentria lignicolor	(Walker)
		Peridea basitriens	(Walker)
		Schizura leptinoides	(Grote)
		Schizura unicornis	(Smith)
	Nymphalidae		
		Agraulis vanillae	(Linnaeus)
		Anaea andria	Scudder
		Asterocampa celtis	(Boisduval & LeConte)
		Asterocampa clyton	(Boisduval & LeConte)
		Cercyonis pegala	(Fabricius)
		Chlosyne gorgone	(Hübner)
		Chlosyne nycteis	Doubleday
		Danaus gilippus	(Cramer)
		Danaus plexippus	(Linnaeus)
		Euptoieta claudia	(Cramer)
		Junonia coenia	Hübner
		Libytheana carinenta	(Cramer)
		Limentis archippus	(Cramer)
		Megisto cymela	(Cramer)
		Nymphalis antiopa	(Linnaeus)
		Phyciodes graphica	(R. Felder)
		Phyciodes phaon	(W.H. Edwards)
		Phyciodes tharos	(Drury)
		Polygonia interrogationis	(Fabricius)
		Vanessa atalanta	(Linnaeus)
		Vanessa cardui	(Linnaeus)
		Vanessa virginiensis	(Drury)
	Papilionidae		
		Battus philenor	(Linnaeus)
		Papilio cresphontes	Cramer
		Papilio glaucus	Linnaeus
		Papilio polyxenes	Fabricius
	Pieridae		
		Abaeis nicippe	(Cramer)
		Anthocharis midea	(Hübner)

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		Colias eurytheme	(Boisduval)
		Colias philodice	(Godart)
		Euchloe olympia	(W.H. Edwards)
		Eurema mexicana	(Boisduval)
		Nathalis iole	Boisduval
		Phoebis sennae	(Linnaeus)
		Pieris rapae	(Linnaeus)
		Pontia protodice	(Boisduval & LeConte)
		Pyrisitia lisa	(Boisduval & LeConte)
		Zerene cesonia	(Stoll)
	Saturniidae		
		Actias luna	(Linnaeus)
		Antheraea polyphemus	(Cramer)
		Automeris io	(Fabricius)
		Sphingicampa bicolor	(Harris)
	Sphingidae		
		Amorpha juglandis	(J.E. Smith)
		Amphion floridensis	Clark
		Ceratomia amyntor	(Geyer)
		Ceratomia catalpae	(Boisduval)
		Ceratomia undulosa	(Walker)
		Darapsa myron	(Cramer)
		Deidamia inscriptum	(Harris)
		Eumorpha achemon	(Drury)
		Hemaris diffinis	(Boisduval)
		Hyles lineata	(Fabricius)
		Manduca quinquemaculata	(Haworth)
		Manduca sexta	(Linnaeus)
		Paonias excaecatus	(J.E. Smith)
		Smerinthus jamaicensis	(Drury)
		Sphecodina abbottii	(Swainson)
		Xylophanes tersa	(Linnaeus)
	Tortricidae		
		Acleris semipurpurana	(Kearfott)
		Aethes argentilimitana	(Robinson)
		Aethes seriatana	(Zeller)
		Archipini	

Order	Family	Scientific	Taxonomic Authority
		Archips argyrospila	(Walker)
		Archips rileyana	(Grote)
		Carolella bimaculana	(Robinson)
		Chimoptesis gerulae	(Heinrich)
		Chimoptesis pennsylvaniana	(Kearfott)
		Choristoneura rosaceana	(Harris)
		Clepsis virescana	(Clemens)
		Cydia caryana	(Fitch)
		Cydia latiferreanus	(Walsingham)
		Epiblema boxcana	(Kearfott)
		Epiblema desertana	(Zeller)
		Epiblema scudderiana	(Clemens)
		Epiblema strenuana	(Walker)
		Epiblema tripartitana	(Zeller)
		Episimus sp. ?	
		Eucosma comatulana	(Zeller)
		Eucosma gilletteana	Dyar
		Eucosma matutina	(Grote)
		Eucosma palabundana	Heinrich
		Eucosma pulveratana	(Walsingham)
		Eucosma ridingsana	(Robinson)
		Eucosma ridingsana complex	
		Eucosma robinsonana	(Grote)
		Eucosma similar to vagana	
		Eucosma similar to watertonana	
		Eucosma sombreana	
		Eumarozia malachitana	(Zeller)
		Gretchena ?amatana	
		Hystricophora vestaliana	(Zeller)
		Ofatulena duodecimstriata	(Walsingham)
		Pelochrista scintillana	(Clemens)
		Pelochrista zomonana	(Kearfott)
		Phaneta delphinoides	(Heinrich)
		Phaneta kiscana?	(Kearfott)
		Phaneta near varecundana	Blanchard
		Phaneta pallidicostana?	(Walsingham)
		Phaneta unidentified species	
		Platynota labiosana	(Zeller)

Order	Family	Scientific	Taxonomic Authority
		Platynota nigrocervinana	Walsingham
		Sparganothis belfrageana	(Zeller)
		Sparganothis caryae	(Robinson)
		Sparganothis diluticostana	(Walsingham)
		Sparganothis directana	(Walker)
		Sparganothis possibly pettitana	(Robinson)
		Sparganothis sulfurena	(Clemens)
		Sparganothoides lentiginosana	(Walsingham)
		Unidentified genus and species	
Neuroptera			
	Corydalidae		
		Chauliodes rastricornis	Rambur
		Corydalus cornutus	(Linnaeus)
	Sialidae		
		Sialis itasca	Sialis itasca Ross
		Sialis mohri	Sialis mohri Ross
	Sisyridae		
		Climacia areolaris	(Hagen)
		Climacia chapini	Parfin and Gurney
		Sisyra vicaria	(Walker)
Odonata			
	Aeshnidae		
		Anax junius	(Drury)
		Basiaeschna janata	(Say)
	Calopterygidae		
		Calopteryx maculata	(Beauvois)
		Hetaerina americana	(Fabricius)
		Hetaerina titia	(Drury)
	Coenagrionidae		
		Argia apicale	(Say)
		Argia fumipennis	(Burmeister)
		Argia immunda	(Hagen)
		Argia moestum	(Hagen)
		Argia sedula	(Hagen)
		Argia translata	Hagen in Selys
		Enallagma aspersum	(Hagen)

Order	Family	Scientific	Taxonomic Authority
		Enallagma basidens	Calvert
		Enallagma civile	(Hagen)
		Enallagma divagans	Selys
		Enallagma exsulans	(Hagen)
		Enallagma praevarum	(Hagen)
		Enallagma signatum	(Hagen)
		Enallagma vesperum	Calvert
		Ischnura demorsa	(Hagen)
		Ischnura denticollis	(Burmeister)
		Ischnura hastata	(Say)
		Ischnura perparva	(McLachlan in Selys)
		Ischnura posita	(Hagen)
		Ischnura verticalis	(Say)
		Telebasis salvum	(Hagen)
	Cordulegastridae		
		Cordulegaster obliqua	(Say)
	Corduliidae		
		Didymops transversa	(Say)
		Epitheca cynosura	(Say)
		Epitheca petechialis	(Muttkowski)
		Epitheca princeps	Hagen
		Epitheca semiaquea	(Burmeister)
		Macromia illinoiensis georgina	(Selys)
		Macromia pacifica	Hagen
		Somatochlora linearis	(Hagen)
	Gomphidae		
		Dromogomphus spinosus	Selys
		Dromogomphus spoliatus	(Hagen)
		Erpetogomphus designatus	Hagen in Selys
		Gomphus externus	Hagen
		Gomphus militaris	Hagen
		Gomphus ozarkensis	Westfall
		Hagenius brevistylus	Selys
		Phyllogomphoides stigmatus	(Say)
		Progomphus obscurus	(Rambur)
		Stylurus plagiatus	(Selys)

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	Lestidae		
		Lestes alacer	Hagen
		Lestes disjunctus australis	Walker
	Libellulidae		
		Brechmorhoga mendax	(Hagen)
		Celithemis eponina	(Drury)
		Celithemis fasciata	Kirby
		Dythemis fugax	Hagen
		Dythemis velox	Hagen
		Erythemis simplicicollis	(Say)
		Erythrodiplax umbrata	(Linnaeus)
		Ladona deplanata	(Rambur)
		Libellula incesta	Hagen
		Libellula luctuosa	Burmeister
		Libellula lydia	Drury
		Libellula pulchella	Drury
		Orthemis ferruginea	(Fabricius)
		Pachydiplax longipennis	(Burmeister)
		Pantala flavescens	(Fabricius)
		Pantala hymenaea	(Say)
		Perithemis tenera	(Say)
		Sympetrum corrupta	(Hagen)
		Sympetrum vicina	(Hagen)
		Tramea lacerata	Hagen
		Tramea onusta	Hagen
Orthoptera			
	Acrididae		
		Acrolophitus hirtipes	(Say)
		Ageneotettix deorum	(Scudder)
		Arphia conspersa	(Scudder)
		Arphia xanthoptera	(Burmeister)
		Boopedon auriventris	McNeill
		Boopedon gracile	Rehn
		Campylacantha olivacea	(Scudder)
		Chortophaga viridifasciatum	(DeGeer)
		Dactylotum bicolor	(Charpentier)
		Dendrotettix quercus	(Packard)
		Dissosteira carolinus	(Linnaeus)

Order	Family	Scientific	Taxonomic Authority
		Encoptolophus costalis	(Scudder)
		Hadrotettix trifasciatus	(Say)
		Hesperotettix speciosa	(Scudder)
		Hesperotettix viridis pratensis	(Thomas)
		Hesperotettix viridis viridis	(Thomas)
		Hippiscus ocelote	(Saussure)
		Hypochlora alba	(Dodge)
		Leptysma marginicollis	(Serville)
		Melanoplus angustipennis	(Dodge)
		Melanoplus bispinosus	Scudder
		Melanoplus bivittatus	(Say)
		Melanoplus confusus	Scudder
		Melanoplus differentialis nigricans	(Thomas)
		Melanoplus femurrubrum	(DeGeer)
		Melanoplus foedus	Scudder
		Melanoplus glaucipes	(Scudder)
		Melanoplus keeleri	(Thomas)
		Melanoplus packardii	Scudder
		Melanoplus plebejus	(Stal)
		Melanoplus ponderosus	(Scudder)
		Melanoplus sanguinipes	(Fabricius)
		Melanoplus scudderi	(Uhler)
		Melanoplus splendidus	Hebard
		Melanoplus texanus	(Scudder)
		Mermiria bivittata	(Serville)
		Mermiria picta	(Walker)
		Opeia obscurus	(Thomas)
		Ophulella speciosus	(Scudder)
		Paratylotropidia brunneri	Scudder
		Pardalophora saussurei	(Scudder)
		Paropomala sp.	
		Phoetaliotes nebrascensis	(Thomas)
		Pseudopomala brachyptera	(Scudder)
		Psoloessa texana	Scudder
		Schistocerca americana	(Drury)
		Schistocerca lineata	Scudder
		Schistocerca obscurus	(Fabricius)
		Spharagemon collaris	(Scudder)

Order	Family	Scientific	Taxonomic Authority
		Spharagemon equale	(Say)
		Syrbula admirabilis	(Uhler)
		Trachyrhachys kiowa	(Thomas)
		Trimerotropis maritima	(Harris)
		Trimerotropis pallidipennis	(Burmeister)
		Xanthippus corallipes	(Haldeman)
Plecoptera			
	Capniidae		
		Allocapnia granulata	(Claassen)
	Leuctridae		
		Zealeuctra claasseni	(Frison)
	Perlidae		
		Neoperla choctaw	Stark and Baumann
		Perlesta decipiens	(Walsh)
	Perlodidae		
		Hydroperla crosbyi	(Needham and Claassen)
	Taeniopterygidae		
		Taeniopteryx burksi	Ricker and Ross
Trichoptera			
	Helicopsychidae		
		Helicopsyche borealis	(Hagen)
		Helicopsyche limnella	Ross
		Helicopsyche piroa	Ross
		Helicopsyche sp.	
	Hydropsychidae		
		Cheumatopsyche analis	(Banks)
		Cheumatopsyche campyla	Ross
		Cheumatopsyche lasia	Ross
		Cheumatopsyche pasella	Ross
		Cheumatopsyche sp.	
		Hydropsyche bidens	Ross
		Hydropsyche orris	Ross
		Hydropsyche rossi	Flint et al.

Order	Family	Scientific	Taxonomic Authority
		Hydropsyche scalaris	Hagen
		Hydropsyche simulans	Ross
		Hydropsyche sp.	
		Potomyia flava	(Hagen)
		Smicridea fasciatella	McLachlan
		Smicridea signata	(Banks)
	Hydroptilidae		
		Hydroptila ajax	Ross
		Hydroptila angusta	Ross
		Hydroptila armata	Ross
		Hydroptila consimilis	Morton
		Hydroptila hamata	Morton
		Hydroptila perdita	Morton
		Hydroptila sp.	
		Hydroptila waubesiana	Betten
		Ochrotrichia tarsalis	(Hagen)
		Orthotrichia aegerfasciella	(Chambers)
		Orthotrichia cristata	Morton
		Oxyethira azteca	(Mosely)
		Oxyethira forcipata	Mosely
		Oxyethira janella	Denning
		Oxyethira pallida	(Banks)
		Oxyethira sp.	
		Oxyethira zeronia	Ross
	Leptoceridae		
		Ceraclea cancellata	(Betten)
		Ceraclea maculata	(Banks)
		Ceraclea punctata	(Banks)
		Ceraclea sp.	
		Leptocerus americanus	(Banks)
		Nectopsyche candida	(Hagen)
		Nectopsyche pavida	(Hagen)
		Nectopsyche sp.	
		Oecetis avara	(Banks)
		Oecetis cinerascens	(Hagen)
		Oecetis ditissa	Ross
		Oecetis inconspicua	(Walker)

Order	Family	Scientific	Taxonomic Authority
		Oecetis nocturna	Ross
		Oecetis persimilis	(Banks)
		Oecetis sp.	
		Triaenodes helo	Triaenodes helo Milne
		Triaenodes injustus	(Hagen)
		Triaenodes marginata	Sibley
		Triaenodes perna	Ross
		Triaenodes sp.	
		Triaenodes tardus	Milne
		Ylodes frontalis	(Banks)
	Limnephilidae		
		Pycnopsyche lepida	(Hagen)
	Philopotamidae		
		Chimarra angustipennis	Banks
		Chimarra feria	Ross
		Chimarra obscura	(Walker)
	Polycentropodidae		
		Cernotina calcea	Ross
		Cernotina sp.	
		Cernotina spicata	Ross
		Cyrnellus fraternus	(Banks)
		Paranyctiophylax affinis	(Banks)
		Paranyctiophylax moestus	Banks
		Paranyctiophylax sp.	
		Polycentropus centralis	Banks
		Polycentropus sp.	

Appendix B. Arthropod taxa and locations on Fort Sill, Comanche Co., Oklahoma, April 2006 to September 2006.

Coleoptera

Buprestidae

Acmaeodera macra	Horn		
East Range, E. Cache Creek, S. Boundary Road		September 16, 2006	7
East Range, Medicine Creek		September 20, 2003	2
Quanah Range, 0.5 mi. E. Falcon Gate		June 13, 2006	1
Quanah Range, Nr. Twin Gates		September 16, 2006	2
West Range, Blue Beaver Cr., McKenzie Hill Road		October 11, 2002	9
West Range, Blue Beaver Cr., McKenzie Hill Road		September 20, 2003	1
Acmaeodera mixta	LeConte		
East Range, Knob Hill Rd., BLT		June 11, 2006	10
East Range, Natural Resource Building area		July 6, 2002	1
Quanah Range Potawatomie Twins		June 13, 2006	2
Quanah Range, 0.5 mi. E. Falcon Gate		May 29, 2004	1
Quanah Range, 0.5 mi. E. Falcon Gate		June 13, 2006	3
Quanah Range, Nr. Twin Gates		September 16, 2006	1
West Range, Blue Beaver Cr., Blue Beaver Valley Rd. Jct. Deer Cyn. Rd.		July 9, 2004	2
West Range, Blue Beaver Cr., McKenzie Hill Rd.		June 12, 2006	6
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT		July 12, 2006	2
West Range, Blue Beaver Cr., McKenzie Hill Road		July 9, 2004	2
West Range, Engineer Pond		June 13, 2006	11
West Range, Engineer Pond		July 12, 2006	1
West Range, Engineer Pond		August 2, 2006	1
West Range, Ketch Pond		June 12, 2006	13
West Range, Ketch Pond		July 9, 2006	1
West Range, Ketch Pond		July 10, 2006	1
West Range, Medicine Cr., N. Boundary Rd.		June 12, 2006	1
West Range, Punch Bowl Road, ELETRA Rd.		July 8, 2004	3
West Range, West Cache Creek@Quanah Crrek		August 12, 2002	1
Acmaeodera ornata	(Fabricius)		
West Range		June 3, 2002	1
West Range		April 26, 2003	4
West Range, Lake Elmer Thomas		April 25, 2002	1
Acmaeodera pulchella	(Herbst)		
West Range		May 24, 2003	1
West Range		July 1, 2003	1
Acmaeodera tubulus	(Fabricius)		
East Range		April 24, 2002	15
East Range, Knob Hill Rd., BLT		June 11, 2006	1
East Range, Medicine Creek, N. Boundary Rd.		April 8, 2006	32

East Range, Near Geronimo Grave	June 12, 2002	1
Quanah Range, 0.5 mi. E. Falcon Gate	June 13, 2006	1
West Range	April 26, 2002	8
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 13, 2006	1
West Range, Ketch Pond	June 12, 2006	1
West Range, Lake Elmer Thomas	April 9, 2006	10
West Range, Medicine Cr., N. Boundary Rd.	June 12, 2006	1
Agrilaxia flavimana (Gory)		
East Range	April 24, 2002	1
East Range, Chatto Crossing	June 12, 2002	2
Quanah Range, 0.5 mi. E. Falcon Gate	April 8, 2006	1
Quanah Range, Quanah Cr.	April 7, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	April 8, 2006	1
Agrilus bilineatus (Weber)		
West Range, Nr. Strip 15	July 10, 2006	1
Agrilus impexus Horn		
East Range, E. Cache Creek, S. Boundary Road	July 10, 2004	1
East Range, E. Cache Creek, S. Boundary Road	June 13, 2006	2
Quanah Range, Nr. Twin Gates	July 12, 2006	1
West Range, Ketch Pond	July 9, 2006	3
Agrilus politus (Say)		
East Range, BLT N 34° 44.99’ W 98° 20.20’	June 14, 2006	5
East Range, Nr. Geronimo Grave	September 16, 2006	2
Anthaxia viridicornis Say		
East Range	April 24, 2002	1
Brachys aerosus Melsheimer		
West Range, Ketch Pond	June 12, 2006	1
Buprestis confluenta Say		
West Range, Short grass	June 11, 2002	1
Buprestis rufipes Olivier		
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
Chrysobothris adelpha Gemminger and Harold		
East Range, Mixed grass	June 12, 2002	4
Chrysobothris cribraria Mannerheim		
East Range, E. Cache Creek, S. Boundary Road	April 7, 2006	1
Chrysobothris femorata (Olivier)		
East Range	July 7, 2002	1
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, Mixed grass	June 12, 2002	1

East Range, Natural Resource Building area	June 12, 2002	1

Lampetis drummondi (Laporte and Gory)

East Range, S. Boundary Road, Arbuckle Hill	July 10, 2006	45
Quanah Range, 0.5 mi. E. Falcon Gate	July 9, 2004	24
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	1
Quanah Range, Pottawatamie Pond	August 12, 2003	2
Quanah Range, Pottawatamie Pond	August 2, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	1

Taphrocerus agriloides Crotch

West Range, Ketch Pond	June 12, 2006	2

Chrysomelidae

Altica foliaceae LeConte

East Range, BLT	June 14, 2006	2
East Range, E. Cache Creek, S. Boundary Road	July 13, 2006	1
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	3
East Range, Knob Hill Rd.	June 11, 2006	3
East Range, Natural Resource Building area	August 2, 2006	1
East Range, Near Geronimo Grave	July 10, 2006	2
East Range, S. Boundary Road, Arbuckle Hill	June 14, 2006	3
East Range, S. Boundary Road, Arbuckle Hill	July 10, 2006	2
East Range, S. Boundary Road, Arbuckle Hill	August 1, 2006	4
Quanah Range, 0.5 mi. E. Falcon Gate	July 11, 2006	3
Quanah Range, Near Twin Gates	July 12, 2006	4
Quanah Range, Near Twin Gates	August 2, 2006	1
Quanah Range, Near Twin Gates, BLT	July 12, 2006	5
Quanah Range, Pottawatamie Pond	July 11, 2006	1
Quanah Range, Quanah Creek	August 3, 2006	1
West Range, Engineer Pond	July 12, 2006	1
West Range, Ketch Pond	July 10, 2006	7
West Range, Ketch Pond	July 11, 2006	2

Altica spp.

East Range	August 14, 2003	2
West Range	April 26, 2002	2
West Range, Ketch Pond	September 18, 2005	3

Anisostena nigrita (Olivier)

Quanah Range, 0.5 mi. E. Falcon Gate	July 12, 2006	1
West Range	April 26, 2002	1
West Range, Ketch Pond	July 10, 2006	1

Anomoea flavokansiensis Moldenke

East Range, Chatto Crossing	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	June 10, 2003	1
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	1
East Range, Knob Hill Rd., BLT	June 11, 2006	1
East Range, Medicine Creek, N. Boundary Rd.	June 12, 2006	1

East Range, Mixed grass		June 12, 2002	2
East Range, Near Hoyle Bridge		June 12, 2003	1
East Range, Road to Park Hill		May 27, 2004	1
East Range, Signal Mountain		June 12, 2002	1
East Range, Tall grass		June 12, 2002	4
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond		June 13, 2006	1
Quanah Range, Pottawatomie Twins		June 13, 2006	3
Quanah Range, Rock Creek		May 28, 2004	1
West Range		May 24, 2003	2
West Range, Blue Beaver Cr., McKenzie Hill Road		June 9, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road		June 12, 2006	1
West Range, Lake Elmer Thomas		June 12, 2003	1
West Range, Short grass		June 11, 2002	1
Anomoea laticlavia	(Forester)		
West Range		April 26, 2003	1
Asphaera lustrans	(Crotch)		
East Range		April 24, 2002	5
West Range		April 26, 2002	1
West Range, Lake Elmer Thomas		April 9, 2006	1
Baliosus nervosus	(Panzer)		
East Range, Peachtree Crossing		August 12, 2003	1
Bassareus clatharatus	(Melsheimer)		
East Range, Clear Lake		June 12, 2003	1
East Range, Horn Pond		June 14, 2006	1
East Range, S. Boundary Rd.		June 14, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road		June 12, 2006	3
West Range, Lake Elmer Thomas		June 12, 2006	1
West Range, Lake Elmer Thomas		July 12, 2006	1
West Range, Lake Elmer Thomas, BLT		July 12, 2006	6
Bassareus lituratus	(Fabricius)		
East Range		April 26, 2002	2
Quanah Range, Pottawatamie Pond		June 13, 2006	1
West Range		April 26, 2002	2
Bassareus mammifer	Newman		
East Range		April 26, 2002	1
Blepharida rhois	(Forster)		
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond		April 7, 2006	1
West Range		April 26, 2002	1
Calligrapha bidenticola	Brown		
West Range, Lake Elmer Thomas		September 19, 2003	1
Calligrapha sp.			
West Range, Lake Elmer Thomas		September 19, 2003	1
Capraita sexmaculata	(Illiger)		

East Range	April 24, 2002	1
East Range, E. Cache Creek, S. Boundary Road	July 13, 2006	1
Chaetocnema denticulata (Illiger)		
West Range, Lake Elmer Thomas	July 12, 2006	1
Chaetocnema pulicaria Melsheimer		
East Range, Medicine Creek, N. Boundary Rd.	June 12, 2005	1
Chrysochus auratus (Fabricius)		
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	2
East Range, Parks Hill	June 12, 2003	1
West Range, Short grass	June 11, 2002	1
Chrysolina flavomarginata (Say)		
East Range	April 26, 2002	3
West Range	April 26, 2002	2
Chrysomela knabi Brown		
East Range, Medicine Creek, N. Boundary Rd.	April 7, 2006	4
East Range, Natural Resource Building area	March 31, 2003	1
Quanah Range, Pottawatamie Pond	May 28, 2004	1
West Range	April 26, 2002	1
West Range, Blue Beaver Cr.	June 13, 2006	2
West Range, Blue Beaver Cr., McKenzie Hill Road	April 7, 2006	5
West Range, Engineer Pond	April 8, 2006	1
West Range, Lake Elmer Thomas	April 9, 2006	3
West Range, West Cache Creek@Quanah Crrek	April 24, 2003	4

Colaspis crinicornis chittendeni Blake		
East Range, Near Geronimo Grave	August 2, 2006	4
Colaspis sp.		
East Range, Mixed grass	June 12, 2002	5
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	4
East Range, Tall grass	June 12, 2002	1
Coleothorpa axillaris (LeConte)		
East Range, Chatto Crossing	June 12, 2002	1
East Range, S. Boundary Road, Arbuckle Hill	August 1, 2006	2
Quanah Range, Near Twin Gates	July 12, 2006	1
Quanah Range, Pottawatamie Pond	July 11, 2006	2
Quanah Range, Pottawatomie Twins	June 13, 2006	1
West Range, Engineer Pond	September 16, 2006	1
West Range, Lake Elmer Thomas	June 12, 2006	1
Coleothorpa dominicana franciscana (LeConte)		
East Range	April 24, 2002	1
East Range	June 2, 2002	2
East Range, Knob Hill Rd., BLT	June 11, 2006	1
East Range, Tall grass	June 12, 2002	1
Coscinoptera aeneipennis (LeConte)		
East Range, E. Cache Creek, S. Boundary Road	June 10, 2004	1
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	1
Cryptocephalus calidus Suffrian		
Quanah Range, 0.5 mi. E. Falcon Gate	July 11, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	June 13, 2006	1
Cryptocephalus guttulatus Olivier		
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, Natural Resource Building area	June 12, 2002	1
Cryptocephalus leucomelas leucomelas Suffrian		
East Range	June 14, 2006	2
East Range, Natural Resource Building area	June 12, 2002	1
East Range, Natural Resource Building area	August 2, 2006	1
East Range, Near Hoyle Bridge	June 12, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	2
Cryptocephalus mutabilis Melsheimer		
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	1

West Range, Punch Bowl Road, ELETRA Rd.	July 8, 2004	1
Cryptocephalus notatus Fabricius		
East Range	April 24, 2002	14
West Range	April 26, 2002	5
Cryptocephalus quadreplex Newman		
East Range, E. Cache Creek, S. Boundary Road	July 13, 2006	1
West Range, West Cache Cr. @ Witchita NWR border	April 7, 2006	1
Cryptocephalus venustus Fabricius		
East Range	August 10, 2002	1
Derospidea brevicollis (LeConte)		
East Range, 0.5 mi. E. Parks Hill	May 30, 2004	1
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	2
Diabrotica cristata (Harris)		
East Range	June 2, 2002	1
East Range, Knob Hill Rd., BLT	June 11, 2006	6
East Range, Mixed grass	June 12, 2002	17
East Range, Natural Resource Building area	June 12, 2002	4
East Range, Near Geronimo Grave	May 27, 2004	4
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	3
East Range, Road to Park Hill	May 27, 2004	8
East Range, S. Boundary Rd.	June 11, 2006	1
West Range	June 3, 2002	4
West Range, Blue Beaver Cr., McKenzie Hill Road	May 28, 2004	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	1
West Range, Engineer Pond	June 13, 2006	1
West Range, Lake Elmer Thomas	June 12, 2006	1
West Range, LETRA, Pratt Hill	June 12, 2006	1
Diabrotica tibialis Jacoby		
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	1
Diabrotica undecimpunctata howardi Barber		
East Range, E. Cache Creek, S. Boundary Road	September 19, 2003	1
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	1
East Range, E. Cache Creek, S. Boundary Road, BLT	June 14, 2006	1
East Range, Knob Hill Rd.	September 15, 2006	1
East Range, Medicine Creek, N. Boundary Rd.	June 12, 2006	1
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2002	1
East Range, Natural Resource Building area	June 12, 2002	1

East Range, Near Geronimo Grave	August 2, 2006	1
East Range, Near Geronimo Grave	September 16, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	September 18, 2005	1
Quanah Range, Near Twin Gates	September 16, 2006	1
Quanah Range, Pottawatomie Twins	June 13, 2006	1
Quanah Range, Rock Creek	September 16, 2006	2
West Range	June 3, 2002	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 13, 2006	2
West Range, Engineer Pond	April 8, 2006	1
West Range, Ketch Pond	September 18, 2005	2
West Range, Ketch Pond	June 12, 2006	1
West Range, Ketch Pond	July 9, 2006	1
West Range, Lake Elmer Thomas	September 16, 2006	1
West Range, Lake Elmer Thomas, BLT	June 12, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	September 16, 2006	1
West Range, Near Twin Gates	September 16, 2006	5

Diachus auratus (Fabricius)

East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	1
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	1
East Range, Near Geronimo Grave	August 2, 2006	1
West Range, Ketch Pond	June 12, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	August 2, 2006	3

Disonycha abmirabila Blatchley

East Range, E. Cache Creek, S. Boundary Road	July 13, 2006	1

Distigmoptera impennata Blake

Quanah Range	September 17, 2005	1

Donacia biimpressa Melsheimer

East Range, Natural Resource Building area	March 31, 2003	2
West Range, West Cache Creek@Quanah Crrek	April 24, 2003	2

Donacia hypoleuca Lacordaire

Quanah Range, Near Twin Gates	July 12, 2006	1
Quanah Range, Pottawatamie Pond	July 1, 2003	2
West Range, Lake Elmer Thomas	July 12, 2006	3
West Range, West Cache Creek	July 1, 2003	1

Exema canadensis Pierce

West Range, Ketch Pond	June 12, 2006	1

Exema dispar Lacordaire

West Range, Engineer Pond	June 13, 2006	1

Graphops n. sp.

West Range, Engineer Pond	June 13, 2006	1

Graphops sp.

East Range, S. Boundary Road, Arbuckle Hill	August 1, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	1

West Range, Ketch Pond	July 10, 2006	1
Jonthonota nigripes (Olivier)		
West Range, Punch Bowl Road, ELETRA Rd.	July 8, 2004	1
Leptinotarsa decemlineata (Say)		
East Range, E. Cache Creek, S. Boundary Road	August 1, 2006	1
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	1
East Range, S. Boundary Road, Arbuckle Hill	June 14, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	July 12, 2006	1
West Range, Ketch Pond	June 12, 2006	5
West Range, Ketch Pond	July 9, 2006	1
Longitarsus sp.		
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	2
Luperosoma parallelum (Horn)		
East Range, E. Cache Creek, S. Boundary Road	June 13, 2006	3
East Range, E. Cache Creek, S. Boundary Road, BLT	June 13, 2006	4
East Range, E. Cache Creek, S. Boundary Road, BLT	June 14, 2006	1
East Range, S. Boundary Road, Arbuckle Hill	June 14, 2006	1
Quanah Range, Pottawatomie Twins	June 13, 2006	1
Lysathia ludoviciana (Fall)		
East Range, Natural Resource Building area	July 14, 2006	1
West Range, Lake Elmer Thomas	October 11, 2002	1
Metachroma laevicolle Crotch		
West Range, Ketch Pond	June 12, 2006	1
West Range, LETRA, Pratt Hill	June 12, 2006	1
Metrioidea blakeae (Wilcox)		
East Range, BLT	June 14, 2006	1
East Range, Natural Resource Building area	June 12, 2006	1
West Range, Near Strip 15	July 10, 2006	2
Metrioidea brunnea (Crotch)		
East Range, Near Geronimo Grave	July 10, 2006	30
East Range, Near Geronimo Grave	July 11, 2006	2
East Range, Near Geronimo Grave	August 2, 2006	5
East Range, S. Boundary Road, Arbuckle Hill	June 14, 2006	1
Quanah Range, Near Twin Gates	August 2, 2006	1
Quanah Range, Quanah Creek	July 12, 2006	1
Quanah Range, Quanah Creek	September 16, 2006	3
Quanah Range, West Cache Cr., S. Boundary Road	August 2, 2006	1
West Range, Near Strip 15	July 10, 2006	1
Metrioidea popenoei (Blake)		
East Range, Natural Resource Building area	September 13, 2002	1
East Range, Natural Resource Building area	October 12, 2002	1
Quanah Range, Near Twin Gates	September 16, 2006	1

Microrhopala excavata excavata (Olivier)

East Range, S. Boundary Road, Arbuckle Hill	August 1, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	July 11, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	3
Quanah Range, West Cache Cr., S. Boundary Road	August 2, 2006	1

Microrhopala vittata (Fabricius)

Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	June 13, 2006	7
Quanah Range, Pottawatomie Twins	June 13, 2006	1
West Range, Engineer Pond	June 13, 2006	6
West Range, Ketch Pond	July 9, 2006	1
West Range, Ketch Pond	July 10, 2006	1

Myochrous denticollis (Say)

East Range, Mixed grass	June 12, 2002	1
Quanah Range, Pottawatamie Pond	June 13, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	3
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	1

Omophoita cyanipennis octomaculata (Crotch)

East Range, Natural Resource Building area	August 3, 2006	1
Quanah Range, Quanah Creek	August 3, 2006	1
West Range, Lake Elmer Thomas	September 16, 2006	1

Ophraella americana (Fabricius)

East Range, E. Cache Creek, S. Boundary Road	June 13, 2006	2
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	June 13, 2006	1
West Range, Ketch Pond	July 9, 2006	2

Ophraella communa LeSage

East Range, BLT	June 14, 2006	1

Oulema simulans (Schaeffer)

East Range, Medicine Creek, N. Boundary Rd.	July 10, 2006	2
West Range, Blue Beaver Cr., McKenzie Hill Road	May 28, 2004	2
West Range, Lake Elmer Thomas	June 12, 2006	1

Oulema variabilis White

West Range, Medicine Cr., N. Boundary Rd.	July 10, 2006	1

Pachybrachis atomarius (Melsheimer)

East Range, Near Geronimo Grave	September 16, 2006	5
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	3
Quanah Range, Near Twin Gates	July 12, 2006	1
Quanah Range, Near Twin Gates	September 16, 2006	3
Quanah Range, Pottawatamie Pond	July 11, 2006	3
West Range, Engineer Pond	July 12, 2006	2
West Range, Ketch Pond	June 12, 2006	1
West Range, Ketch Pond	July 10, 2006	1

Pachybrachis bivittatus (Say)		
East Range, Clear Lake	June 12, 2003	1
East Range, Knob Hill Rd., BLT	June 11, 2006	1
East Range, Knob Hill Rd., BLT	June 14, 2006	1
East Range, Natural Resource Building area, BLT	July 10, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 1, 2003	2
West Range, Blue Beaver Cr., McKenzie Hill Road	May 28, 2004	3
West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 13, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	1
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	1
West Range, West Cache Creek, S. Boundary Rd.	August 2, 2006	1
Pachybrachis confusus Bowditch		
East Range, Medicine Creek, N. Boundary Rd.	June 12, 2006	1
West Range, Engineer Pond	June 13, 2006	1
Pachybrachis diversus Fall		
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	1
East Range, Knob Hill Rd., BLT	June 11, 2006	2
East Range, Near Geronimo Grave	July 10, 2006	1
East Range, Near Geronimo Grave	September 16, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	July 12, 2006	2
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	6
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	September 16, 2006	3
Quanah Range, West Cache Cr., S. Boundary Road	August 2, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	1
West Range, Ketch Pond	July 10, 2006	1
West Range, Lake Elmer Thomas	September 16, 2006	1
West Range, West Cache Creek, S. Boundary Rd.	August 2, 2006	3
Pachybrachis haematodes Suffrian		
West Range	April 26, 2002	1
Pachybrachis impurus Suffrian		
West Range, Near Strip 15	August 2, 2006	1
Pachybrachis luridus (Fabricius)		
East Range, E. Cache Creek, S. Boundary Road	June 13, 2006	1
Pachybrachis nigricornis autolycus Fall		
East Range	April 24, 2002	7
East Range, E. Cache Creek, S. Boundary Road	June 13, 2006	1
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	2
East Range, Road to Park Hill	May 27, 2004	2
East Range, S. Boundary Road, Arbuckle Hill	June 14, 2006	1
West Range	April 24, 2002	4

Pachybrachis othonus pallidipennis	Suffrian		
East Range, Off Elgin Rd. S. Frisco Ridge		May 27, 2004	1
East Range, S. Boundary Road, Arbuckle Hill		June 14, 2006	1
Pachybrachis othonus sioux	Balsbaugh		
East Range, Knob Hill Rd., BLT		June 11, 2006	1
Pachybrachis parvinotatus	Fall		
East Range, E. Cache Creek, S. Boundary Road		June 14, 2006	2
West Range, Engineer Pond		June 13, 2006	1
West Range, Ketch Pond		June 12, 2006	1
Pachybrachis spp.			
East Range		August 12, 2003	3
East Range, Horn Pond		June 14, 2006	1
East Range, Mixed grass		April 26, 2002	1
East Range, Natural Resource Building area		August 2, 2006	1
East Range, Tall grass		June 12, 2002	2
Quanah Range, 0.5 mi. E. Falcon Gate		August 2, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond		September 16, 2006	7
West Range		April 26, 2002	11
West Range		August 12, 2003	1
Pachybrachis spumarius	Suffrian		
East Range, E. Cache Creek, S. Boundary Road		August 2, 2006	1
East Range, Knob Hill Rd.		September 15, 2006	1
East Range, Near Geronimo Grave		August 2, 2006	2
East Range, Near Geronimo Grave		September 16, 2006	5
Quanah Range, 0.5 mi. E. Falcon Gate		September 16, 2006	1
Quanah Range, Near Twin Gates		September 16, 2006	1
West Range, Ketch Pond		July 10, 2006	1
West Range, Lake Elmer Thomas		September 16, 2006	1
West Range, Near Strip 15		September 16, 2006	1
Pachybrachis vau imperfectus	Fall		
East Range		August 12, 2003	1
Pachybrachis virgatus	LeConte		
East Range, Knob Hill Rd., BLT		June 11, 2006	1
Paria fragariae	Wilcox		
Quanah Range, 0.5 mi. E. Falcon Gate		August 2, 2006	1
Paria quadriguttata	LeConte		
East Range, BLT		June 14, 2006	2
East Range, Natural Resource Building area		June 12, 2006	2
East Range, Natural Resource Building area		August 2, 2006	1
East Range, Near Geronimo Grave		July 10, 2006	5

Paria thoracica	(Melsheimer)		
West Range, Ketch Pond		June 12, 2006	1
West Range, Ketch Pond		July 10, 2006	1
Phyllecthris gentilis	LeConte		
East Range		April 26, 2002	1
Phyllotreta pusilla	Horn		
East Range, Near Geronimo Grave		August 2, 2006	1
Phyllotreta sp.			
East Range, Medicine Creek, N. Boundary Rd.		September 16, 2006	41
Rhabdopterus sp.			
West Range, Blue Beaver Valley Rd.		June 11, 2002	1
Saxinis knausii	Schaeffer		
East Range, Mixed grass		June 12, 2002	1
East Range, Near Geronimo Grave		May 27, 2004	1
East Range, Road to Park Hill		May 27, 2004	3
Saxinis omogera	Lacordaire		
East Range, Beef Creek		June 15, 2006	1
East Range, Knob Hill Rd., BLT		June 12, 2006	1
East Range, S. Boundary Road, Arbuckle Hill		June 14, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond		June 13, 2006	1
Quanah Range, Pottawatomie Twins		June 13, 2006	1
West Range, Engineer Pond		June 13, 2006	2
Spintherophyta globosa	(Olivier)		
East Range		April 24, 2002	5
Systena dimorpha	Blake		
East Range, Off Elgin Rd. S. Frisco Ridge		May 27, 2004	1
Systena frontalis	(Fabricius)		
Quanah Range, Pottawatamie Pond		July 11, 2006	1
West Range, Lake Elmer Thomas		July 12, 2006	17
Systena hudsonias	(Forster)		
East Range		April 26, 2002	3
Trirhabda canadensis	(Kirby)		
East Range, E. Cache Creek, S. Boundary Road		May 29, 2004	1
East Range, Mixed grass		June 12, 2002	3
East Range, Off Elgin Rd. S. Frisco Ridge		May 27, 2004	1
East Range, Road to Park Hill		May 27, 2004	3
Xanthogaleruca luteola	(Muller)		
East Range		August 17, 2003	1
East Range, Natural Resource Building area		August 9, 2002	1
East Range, Natural Resource Building area, BLT		July 14, 2006	1

East Range, Near Geronimo Grave		August 2, 2006	2
Quanah Range, Near Twin Gates		July 12, 2006	23
Quanah Range, Quanah Creek, BLT		July 12, 2006	2
West Range, Engineer Pond		July 12, 2006	1
West Range, Lake Elmer Thomas		July 12, 2006	2
Xanthonia n. sp.			
West Range, Blue Beaver Cr., McKenzie Hill Road		April 6, 2006	1
Xanthonia sp.			
West Range, Sitting Bear Creek		July 9, 2004	1
Xanthonia villosula	(Melsheimer)		
West Range, Trib. To Rabbit Creek		June 14, 2006	1
Zygogramma disrupta	(Rogers)		
East Range, BLT		June 14, 2006	2
East Range, E. Cache Creek, S. Boundary Road		May 30, 2004	1
East Range, E. Cache Creek, S. Boundary Road, BLT		June 14, 2006	1
East Range, Knob Hill Rd.		September 15, 2006	4
East Range, Near Geronimo Grave		September 16, 2006	1
East Range, S. Boundary Road, Arbuckle Hill		August 1, 2006	2
Quanah Range, 0.5 mi. E. Falcon Gate		July 11, 2006	1
Quanah Range, Near Twin Gates		July 12, 2006	1
Quanah Range, Near Twin Gates, BLT		July 10, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road		June 12, 2006	3
West Range, Engineer Pond		June 13, 2006	2
West Range, Ketch Pond		July 9, 2006	1
West Range, Ketch Pond		July 10, 2006	7
West Range, Punch Bowl Road, ELETRA Rd.		July 8, 2004	2
Zygogramma exclamationis	(Fabricius)		
West Range, Blue Beaver Cr., McKenzie Hill Road		June 10, 2003	1
West Range, Lake Elmer Thomas		June 12, 2003	1
Zygogramma heterothecae	Linell		
Quanah Range, Near Twin Gates		July 12, 2006	1
Quanah Range, Near Twin Gates		September 16, 2006	1
Zygogramma suturalis	(Fabricius)		
West Range, Ketch Pond		July 9, 2006	2

Coccinellidae

Chilocorus stigma	(Say)		
West Range, Ketch Pond		September 17, 2005	1
Coccinella septempunctata	Linnaeus		
East Range, E. Cache Creek, S. Boundary Road		September 17, 2005	1
East Range, E. Cache Creek, S. Boundary Road		June 13, 2006	1
East Range, Horn Pond		June 14, 2006	1

East Range, Knob Hill Rd.	June 11, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	1
Quanah Range, Quanah Creek, BLT	September 16, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	September 17, 2005	1
West Range, Engineer Pond	August 3, 3006	1
West Range, Ketch Pond	September 18, 2005	1
West Range, Ketch Pond	July 9, 2006	1
West Range, Lake Elmer Thomas	September 16, 2006	2

Coccinella transversoguttata richardsoni Brown

Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	1

Coleomegilla maculata lengi Timberlake

West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	1
West Range, Ketch Pond	June 12, 2006	1
West Range, Lake Elmer Thomas	July 12, 2006	1
West Range, Lake Elmer Thomas	September 16, 2006	1

Cycloneda sanguinea Linnaeus

East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	1

Harmonia axyridis (Pallas)

East Range	June 14, 2006	1
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	1
East Range, Natural Resource Building area, BLT	June 12, 2006	2
East Range, Natural Resource Building area, BLT	July 10, 2006	1
East Range, Natural Resource Building area, BLT	July 14, 2006	1
East Range, Near Geronimo Grave, BLT	July 10, 2006	1
East Range, Near Geronimo Grave, BLT	July 11, 2006	2
East Range, Near Geronimo Grave, BLT	August 2, 2006	1
Quanah Range, Near Twin Gates	July 12, 2006	5
Quanah Range, Near Twin Gates	August 2, 2006	1
Quanah Range, Quanah Creek, BLT	June 14, 2006	1
Quanah Range, Quanah Creek, BLT	August 3, 2006	1
West Range, Lake Elmer Thomas	June 12, 2006	1

Hippodamia convergens (Guerin-Meneville)

East Range, E. Cache Creek, S. Boundary Road	June 14, 2006	1
Quanah Range, Pottawatomie Twins	June 13, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	1
West Range, Ketch Pond	June 12, 2006	1
West Range, Ketch Pond	July 9, 2006	1
West Range, LETRA, Pratt Hill	June 12, 2006	1

Hippodamia glacialis (Fabricius)

Quanah Range, Pottawatomie Twins	June 13, 2006	1

Hippodamia variegata (Goeze)

Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	1
Quanah Range, Pottawatomie Twins	June 13, 2006	1

Hyperaspis fimbriolata Melsheimer

Quanah Range, 0.5 mi. E. Falcon Gate	September 16, 2006	1

Hyperaspis undulata (Say)

Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	1

Olla v-nigrum (Mulsant)

East Range, Beef Creek, BLT	June 15, 2006	1
East Range, BLT	June 14, 2006	5
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	2
East Range, Natural Resource Building area, BLT	June 12, 2006	5
East Range, Natural Resource Building area, BLT	July 14, 2006	3
East Range, Near Geronimo Grave	August 2, 2006	1
East Range, Near Geronimo Grave	September 16, 2006	3
East Range, Near Geronimo Grave, BLT	July 10, 2006	3
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	June 13, 2006	2
Quanah Range, Near Twin Gates	July 12, 2006	11
Quanah Range, Near Twin Gates	August 2, 2006	1
Quanah Range, Quanah Creek	September 16, 2006	3
Quanah Range, Rock Creek	September 16, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	1
West Range, Engineer Pond	July 12, 2006	2
West Range, Near Strip 15	August 2, 2006	1
West Range, Near Strip 15	September 16, 2006	1
West Range, Near Twin Gates	September 16, 2006	2

Psyllobora renifer Casey

West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	1

Dermestidae

Anthrenus verbasci (Linnaeus)

East Range, Natural Resource Building area	September 17, 2005	1
West Range, Engineer Pond, BLT.	July 12, 2006	1

Dermestes caninus Gemar

East Range, Natural Resource Building area	July 10, 2006	3
East Range, Natural Resource Building area, Liver bait	July 14, 2006	28
West Range, Lake Elmer Thomas	April 8, 2006	2
West Range, Near Twin Gates	July 12, 2006	1

Dermestes marmoratus Say

East Range, Natural Resource Building area	August 2, 2006	10
East Range, Natural Resource Building area	August 3, 2006	24

Elateridae

Aeolus mellillus (Say)

Quanah Range, Pottawatamie Pond	July 9, 2004	6

Aeolus scutellatus (Schaeffer)

East Range, 0.5 mi. E. Parks Hill	May 30, 2004	1
East Range, Natural Resource Building area	June 12, 2002	1
East Range, Nr. Geronimo Grave, BLT	August 2, 2006	1
East Range, Road to Park Hill	May 27, 2004	1
Quanah Range, Pottawatamie Pond	July 9, 2004	3
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	1
West Range, Engineer Pond, BLT.	July 12, 2006	2
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	2

Aeolus spp.

East Range, Natural Resource Building Area, BLT	June 12, 2006	1
East Range, Nr. Geronimo Grave	August 2, 2006	1
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	1
Quanah Range, Nr. Twin Gates	August 2, 2006	1
Quanah Range, Nr. Twin Gates, BLT	July 12, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	1
Quanah Range, Rock Cr. Area	August 2, 2006	1
West Range, Engineer Pond, BLT.	July 12, 2006	2
West Range, Lake Elmer Thomas, BLT	July 12, 2006	2
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Nr. Strip 15	September 16, 2006	2
West Range, Nr. Strip 15, BLT	July 10, 2006	1
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	1

Aeolus trilineatus Candeze

East Range, Nr. Geronimo Grave	August 2, 2004	2
East Range, Nr. Geronimo Grave	September 16, 2006	1
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	1
East Range, S. Boundary Rd., BLT	June 14, 2006	12
Quanah Range, Nr. Twin Gates	August 2, 2006	4
Quanah Range, Pottawatamie Pond	July 1, 2003	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	5
Quanah Range, Quanah Cr., BLT	July 12, 2006	5
Quanah Range, Quanah Cr., CDC	July 14, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 13, 2006	3
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	July 12, 2006	7
West Range, Blue Beaver Cr., McKenzie Hill Rd., CDC	July 13, 2006	1
West Range, Engineer Pond, BLT.	July 12, 2006	6
West Range, Lake Elmer Thomas	July 12, 2006	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Nr. Strip 15	August 2, 2006	1

West Range, Nr. Strip 15, BLT	July 10, 2006	1
Agriotes insanus Candeze		
East Range	April 24, 2002	1
West Range	April 26, 2002	3
Agrypnus rectangularis (Say)		
East Range, Mixed grass	June 12, 2002	2
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	1
West Range, Engineer Pond, BLT.	July 12, 2006	1
West Range, Short grass	June 11, 2002	1
Alaus oculatus (Linnaeus)		
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	July 11, 2002	1
East Range, Under Hoyle Bridge	July 7, 2002	1
Ampedus fuscatus (Melsheimer)		
East Range, E. Cache Creek, S. Boundary Road	April 28, 2003	1
East Range, Natural Resource Building area	March 31, 2003	1
Ampedus insignis (LeConte)		
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2004	1
Ampedus sp.		
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	1
East Range, Nr. Geronimo Grave, BLT	August 2, 2006	2
Anchastus binus (Say)		
East Range, E. Cache Creek, S. Boundary Road, BLT	June 14, 2006	1
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	1
East Range, Nr. Geronimo Grave, BLT	August 2, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 13, 2006	1
West Range, Punch Bowl Road, ELETRA Rd.	June 30, 2003	1
Anchastus rufus Candeze		
East Range, Beef Cr., BLT	June 15, 2006	2
East Range, Natural Resource Building Area, BLT	June 12, 2006	1
East Range, S. Boundary Rd., BLT	June 14, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate, BLT	July 12, 2006	3
Quanah Range, Nr. Twin Gates, BLT	August 2, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	2
West Range, Nr. Strip 15	August 2, 2006	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1
Anchastus sp.		
Quanah Range, Rock Creek	July 2, 2003	7
West Range, West Cache Creek	July 1, 2003	1

Athous cucullatus (Say)		
East Range, E. Cache Creek, S. Boundary Road	July 11, 2002	1
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	1
Cardiophorus convexus (Say)		
East Range, Natural Resource Building area	June 12, 2002	2
East Range, S. Boundary Rd., BLT	June 14, 2006	2
Quanah Range, Quanah Cr., BLT	June 14, 2006	4
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	21
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1
Conoderus auritus (Herbst)		
West Range, West Cache Creek @ Omaha Creek	March 28, 2003	1
Conoderus bellus (Say)		
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	1
East Range, Natural Resource Building Area	August 2, 2006	26
East Range, Nr. Geronimo Grave	August 2, 2004	1
East Range, S. Boundary Rd., BLT	June 14, 2006	6
Quanah Range, Nr. Twin Gates	August 2, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	4
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 12, 2006	3
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Nr. Strip 15	August 2, 2006	1
West Range, Nr. Strip 15, BLT	July 10, 2006	2
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	1
Conoderus lividus (DeGeer)		
East Range, Apache Gate Rd., BLT	June 12, 2002	2
East Range, Beef Cr., BLT	June 15, 2006	2
East Range, E. Cache Creek, S. Boundary Road	July 7, 2002	3
East Range, E. Cache Creek, S. Boundary Road	July 11, 2002	2
East Range, Natural Resource Building Area	August 2, 2006	9
East Range, Natural Resource Building Area, BLT	June 12, 2006	7
East Range, Natural Resource Building Area, BLT	July 10, 2006	4
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	2
East Range, Nr. Geronimo Grave, BLT	July 11, 2006	1
East Range, Nr. Geronimo Grave, BLT	August 2, 2006	4
East Range, Parks Hill	July 11, 2002	3
East Range, Peachtree Crossing	August 12, 2003	1
East Range, S. Boundary Rd., BLT	June 14, 2006	12
East Range, Signal Mountain	July 7, 2002	1
Quanah Range, Nr. Twin Gates	August 2, 2006	1
Quanah Range, Nr. Twin Gates	September 16, 2006	1

Quanah Range, Pottawatamie Pond	July 9, 2004	1
Quanah Range, Quanah Cr.	September 16, 2006	2
Quanah Range, Quanah Cr., BLT	June 14, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	2
Quanah Range, Quanah Cr., BLT	August 3, 2006	3
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	18
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 13, 2006	3
West Range, Engineer Pond, BLT.	July 12, 2006	1
West Range, Lake Elmer Thomas	July 7, 2002	1
West Range, Lake Elmer Thomas	July 12, 2006	1
West Range, Medicine Bluffs Shooting Range	June 10, 2003	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Nr. Strip 15, BLT	July 10, 2006	8
West Range, Nr. Strip 15, BLT	August 2, 2006	7
West Range, Nr. Strip 15, BLT	September 16, 2006	1
West Range, Punch Bowl Road before Gruber Hill	May 28, 2004	1
West Range, Punch Bowl Road, ELETRA Rd.	July 2, 2003	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	5

Conoderus sp.

East Range, E. Cache Creek, S. Boundary Road	July 7, 2002	1
East Range, E. Cache Creek, S. Boundary Road	June 12, 2006	1
East Range, Mixed grass	June 12, 2002	1
East Range, Natural Resource Building area	July 6, 2002	2
East Range, Natural Resource Building area	July 7, 2002	3
East Range, Natural Resource Building Area	August 2, 2006	1
East Range, Pond off S. B. Rd.	April 7, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	4
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	4
West Range, Blue Beaver Cr.	July 1, 2003	12
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	July 12, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Punch Bowl Road, ELETRA Rd.	June 30, 2003	1
West Range, Punch Bowl Road, ELETRA Rd.	July 2, 2003	1
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	2
West Range, West Cache Cr. @ Witchita NWR border	June 10, 2004	1
West Range, West Cache Creek	July 1, 2003	21
West Range, West Cache Creek	July 2, 2003	16

Conoderus vespertinus (Fabricius)

East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	1
East Range, E. Cache Creek, S. Boundary Road	July 22, 2005	1
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2002	1
East Range, Mixed grass	June 12, 2003	3
East Range, Natural Resource Building area	June 12, 2002	2
East Range, Natural Resource Building area	July 6, 2002	2

East Range, Natural Resource Building area	July 1, 2003	1
East Range, Natural Resource Building Area	August 2, 2006	1
East Range, Natural Resource Building Area, BLT	June 12, 2006	3
East Range, Natural Resource Building Area, BLT	July 14, 2006	3
East Range, Near Hoyle Bridge	June 10, 2003	1
East Range, Nr. Geronimo Grave, BLT	August 2, 2004	1
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	1
East Range, Road to Park Hill	May 27, 2004	1
East Range, S. Boundary Rd., BLT	June 14, 2006	6
Quanah Range, Nr. Twin Gates	August 2, 2006	4
Quanah Range, Pottawatamie Pond	July 1, 2003	22
Quanah Range, Pottawatamie Pond	July 9, 2003	4
Quanah Range, Pottawatamie Pond	July 10, 2003	1
Quanah Range, Pottawatamie Pond	August 12, 2003	1
Quanah Range, Quanah Cr., BLT	June 14, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	1
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	7
Quanah Range, Rock Creek	July 2, 2003	2
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 13, 2006	2
West Range, Blue Beaver Cr., McKenzie Hill Road	July 1, 2003	3
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	2
West Range, Lake Elmer Thomas	June 12, 2003	2
West Range, Medicine Bluffs Shooting Range	June 11, 2002	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Nr. Strip 15, BLT	July 10, 2006	1
West Range, Punch Bowl Road, ELETRA Rd.	June 12, 2003	1
West Range, Punch Bowl Road, ELETRA Rd.	June 30, 2003	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	7
West Range, West Cache Creek	July 1, 2003	2
West Range, West Cache Creek	July 2, 2003	3
Dipropus simplex (LeConte)		
East Range, Beef Cr., BLT	June 15, 2006	1
East Range, Natural Resource Building Area, BLT	July 14, 2006	1
Esthesopus praeditus Horn		
East Range, Natural Resource Building Area, BLT	July 14, 2006	1
East Range, S. Boundary Rd., BLT	June 14, 2006	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	2
West Range, Nr. Strip 15, BLT	July 10, 2006	1
Glyphonyx ferruginosus Schaeffer		
East Range, Lake George	August 12, 2003	1
East Range, Natural Resource Building Area, BLT	June 12, 2006	1
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	1
East Range, S. Boundary Rd., BLT	June 14, 2006	9
Quanah Range, Nr. Twin Gates	August 2, 2006	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	1

Quanah Range, Rock Cr. Area, BLT	June 14, 2006	2
Quanah Range, Rock Cr., CDC Trap	June 14, 2006	1
West Range, Blue Beaver Cr., Blue Beaver Valley Rd. Jct. Deer Cyn. Rd.		9
West Range, Engineer Pond, BLT.	July 12, 2006	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	3
West Range, West Cache Cr. @ Witchita NWR border	July 10, 2004	10
West Range, West Cache Creek	July 1, 2003	1

Glyphonyx helix Smith and Balsbaugh

East Range, Beef Cr., BLT	June 15, 2006	1
East Range, Mixed grass	June 12, 2002	1
Quanah Range, Nr. Twin Gates	August 2, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 1, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	1

Glyphonyx sp.

East Range, Natural Resource Building Area	August 2, 2006	1
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	1
East Range, S. Boundary Rd., BLT	June 14, 2006	1
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	1
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	7
West Range, LETRA Sewage lagoons, CDC Trap	July 13, 2006	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1

Glyphonyx testaceus (Melsheimer)

Quanah Range, Pottawatamie Pond	July 9, 2004	1

Hadromorphus inflatus (Say)

West Range, Blue Beaver Cr., McKenzie Hill Rd.	April 7, 2006	1
West Range, West Cache Creek	April 26, 2002	10

Hemicrepidius hemipodus Say

East Range, Natural Resource Building area	June 12, 2002	1

Hemicrepidius memnonius (Herbst)

East Range	June 17, 2003	1
East Range, 0.5 mi. E. Parks Hill	May 30, 2004	1
East Range, Beef Cr., BLT	June 15, 2006	9
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, Mix Grass, BLT	June 12, 2002	3
East Range, Mixed grass	June 12, 2002	2
East Range, Natural Resource Building area	May 27, 2003	1
East Range, Parks Hill	June 12, 2003	1

East Range, South Boundary Rd., BLT	June 14, 2006	4
Punch Bowl Rd., Jct. LETRA Rd.	June 30, 2003	1
Quanah Range, Pottawatamie Pond	July 1, 2003	1
Quanah Range, Quanah Cr., BLT	June 14, 2006	9
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	21
Quanah Range, Rock Creek	July 2, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 13, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 10, 2003	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1

Hemirhipus fascicularis (Fabricius)

East Range, Apache Gate Rd., BLT	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	1
East Range, E. Cache Creek, S. Boundary Road, BLT	June 13, 2006	1
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2002	9
East Range, Mixed grass	June 12, 2002	2
East Range, Natural Resource Building area	June 12, 2002	2
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2002	2
West Range, Blue Beaver Cr., McKenzie Hill Road	June 10, 2003	1
West Range, Medicine Bluffs Shooting Range	June 10, 2003	2
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	1

Lacon impressicollis (Say)

East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	3
East Range, S. Boundary Rd., BLT	June 14, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1

Lacon marmorata (Fabricius)

East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	3
East Range, E. Cache Creek, S. Boundary Road	July 7, 2002	1
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	2
East Range, Natural Resource Building Area	August 2, 2006	2
East Range, Natural Resource Building Area, BLT	July 14, 2006	1
East Range, Parks Hill	July 11, 2002	1
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	1
West Range, Medicine Bluffs Shooting Range	June 11, 2003	1
West Range, West Cache Creek @ Omaha Creek	April 24, 2003	1

Lanelater hayekae Spilman

West Range, Lake Elmer Thomas	September 16, 2006	1

Limonius auripilis (Say)		
East Range, Lake George	May 29, 2004	1
Quanah Range, Rock Creek	May 28, 2004	1
Megapenthes angularis LeConte		
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	1
East Range, E. Cache Creek, S. Boundary Road, BLT	June 14, 2006	1
East Range, Mixed grass	June 12, 2003	1
East Range, Natural Resource Building Area	August 2, 2006	1
East Range, Natural Resource Building Area, BLT	July 14, 2006	3
East Range, S. Boundary Rd., BLT	June 14, 2006	2
Quanah Range, Nr. Twin Gates, BLT	July 12, 2006	1
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	1
West Range, Lake Elmer Thomas, BLT	July 12, 2006	1
West Range, Punch Bowl Road before Gruber Hill	May 28, 2004	1
Megapenthes insignis (LeConte)		
East Range, Apache Gate Rd., BLT	June 12, 2002	3
East Range, E. Cache Creek, S. Boundary Road	July 7, 2002	2
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2002	1
East Range, Natural Resource Building Area	August 9, 2002	1
East Range, Natural Resource Building Area, BLT	June 12, 2006	1
East Range, Natural Resource Building Area, BLT	June 12, 2006	1
East Range, Natural Resource Building Area, BLT	August 2, 2006	1
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	1
East Range, Parks Hill	July 11, 2002	1
Quanah Range, 0.5 mi. E. Falcon Gate, BLT	July 12, 2006	1
Quanah Range, Quanah Cr., BLT	June 14, 2006	2
Quanah Range, Quanah Cr., BLT	July 12, 2006	1
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	4
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	July 12, 2006	5
West Range, Blue Beaver Cr., McKenzie Hill Road	July 9, 2004	2
West Range, Lake Elmer Thomas, BLT	July 12, 2006	2
West Range, Medicine Cr., N. Boundary Rd., BLT	June 12, 2002	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	2
West Range, Nr. Strip 15, BLT	July 10, 2006	1
West Range, Punch Bowl Road before Gruber Hill	May 28, 2004	1
Megapenthes rufilabris (Germar)		
East Range, Nr. Geronimo Grave, BLT	August 2, 2006	1

Melanactes piceus (DeGeer)		
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	1
Melanactes puncticollis (LeConte)		
East Range, Chatto Crossing	June 12, 2002	2
East Range, Natural Resource Building area	June 12, 2002	2
Melanotus communis (Gyllenhal)		
East Range, Clear Lake	June 12, 2003	1
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	2
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2002	1
East Range, Natural Resource Building area	June 12, 2002	1
Melanotus cribulosus (LeConte)		
East Range, Natural Resource Building area	May 27, 2003	10
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2004	5
Quanah Range, Rock Creek	July 2, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road		1
Melanotus decumanus (Erichson)		
East Range, Clar Lake	June 12, 2003	1
East Range, Lake George	June 10, 2003	1
East Range, Mixed grass	June 12, 2002	1
East Range, Natural Resource Building area	June 12, 2002	1
East Range, Parks Hill	June 12, 2003	2
East Range, Tall grass	June 12, 2002	1
East Range, Tall grass	June 11, 2003	1
West Range, Blue Beaver Cr.	June 12, 2003	1
West Range, Blue Beaver Cr., Blue Beaver Valley Rd. Jct. Deer Cyn. Rd.		1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 9, 2003	1
Melanotus emissus (LeConte)		
East Range, Apache Gate Rd., BLT	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, Mixed grass	June 12, 2002	3
East Range, Natural Resource Building area	June 12, 2002	2
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	1
West Range, Lake Elmer Thomas	April 25, 2003	2
Melanotus hyslopi Van Zwaluwenberg		
East Range, Beef Cr., BLT	June 15, 2006	1
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	3
West Range, Nr. Ketch Pond, BLT	June 12, 2006	8

Melanotus ignobilis Melsheimer

East Range, 0.5 mi. E. Parks Hill	May 30, 2004	1
East Range, Apache Gate Rd., BLT	June 12, 2002	1
East Range, Beef Cr., BLT	June 15, 2006	6
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	7
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	1
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	1
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2002	2
East Range, Natural Resource Building area	June 12, 2002	3
East Range, Natural Resource Building Area, BLT	July 14, 2006	4
East Range, Nr. Geronimo Grave	July 10, 2006	1
East Range, S. Boundary Rd., BLT	June 14, 2006	1
Quanah Range, Pottawatamie Pond	July 1, 2003	3
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	2
Quanah Range, Rock Cr. Area, BLT	September 16, 2006	1
Quanah Range, Rock Creek	July 2, 2003	3
West Range	May 24, 2003	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Punch Bowl Road, ELETRA Rd.	July 2, 2003	1

Melanotus opacicollis (LeConte)

East Range, Nr. Geronimo Grave	September 16, 2006	1

Melanotus similis (Kirby)

East Range	April 24, 2002	1
East Range, Apache Gate Rd., BLT	June 12, 2002	3
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	April 27, 2003	1
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2002	1
East Range, Natural Resource Building area	June 12, 2002	4
Quanah Range, Pottawatamie Pond	July 1, 2003	1
Quanah Range, Rock Creek	July 2, 2003	1
West Range, Blue Beaver Cr., Blue Beaver Valley Rd. Jct. Deer Cyn. Rd.		1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 1, 2003	1

Melanotus sp.

East Range	June 17, 2003	1
East Range	June 24, 2003	2
East Range, 0.5 mi. E. Parks Hill	May 30, 2004	5
East Range, Apache Gate Rd., BLT	June 10, 2003	1
East Range, Apache Gate Rd., BLT	June 12, 2003	4

East Range, Beef Cr., BLT	June 15, 2006	9
East Range, Clear Lake	June 12, 2003	1
East Range, E Cache Cr., South Boundary Rd.	July 7, 2002	1
East Range, E Cache Cr., South Boundary Rd.	September 16, 2006	1
East Range, E. Cache Cr., South Boundary Rd., BLT	June 14, 2006	2
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	2
East Range, E. Cache Creek, S. Boundary Road	April 27, 2003	2
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	7
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	2
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2002	2
East Range, Mixed grass	June 12, 2002	1
East Range, Natural Resource Building area	June 12, 2002	4
East Range, Natural Resource Building Area	July 7, 2002	1
East Range, Natural Resource Building Area	August 9, 2002	3
East Range, Natural Resource Building Area	August 2, 2006	2
East Range, Natural Resource Building Area, BLT	July 10, 2006	1
East Range, Natural Resource Building Area, BLT	July 14, 2006	1
East Range, Natural Resource Building Area, BLT	August 3, 2006	2
East Range, Natural Resource Buildinga Area, BLT	June 12, 2006	2
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	2
East Range, Parks Hill	June 12, 2003	1
East Range, South Boundary Rd., BLT	June 14, 2006	25
East Range, Tall Grass	June 11, 2003	1
Quanah Range, 0.5 mi. E. Falcon Gate		1
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2004	1
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond	July 12, 2006	2
Quanah Range, Pottawatamie Pond	July 1, 2003	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	4
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	13
Quanah Range, W. Cache Cr., Nr. Wichita NWR Border	May 29, 2004	4
West Range, Blue Beaver Cr, McKenzie Hill Rod.	June 13, 2006	7
West Range, Blue Beaver Cr., Blue Beaver Valley Rd. Jct. Deer Cyn. Rd.		1
West Range, Blue Beaver Cr., McKenzie Hill Rd.	June 9, 2006	1
West Range, Lake Elmer Thomas	September 16, 2006	2
West Range, Lake Elmer Thomas, BLT	June 12, 2006	2
West Range, Nr. Ketch Pond, BLT	June 12, 2006	23
West Range, Nr. Strip 15, BLT	July 10, 2006	1
West Range, Nr. Strip 15, BLT	September 16, 2006	2
West Range, Punch Bowl Rd., before Gruber Hill	May 28, 2004	1

West Range, Punch Bowl Road, ELETRA Rd.	May 28, 2004	1
West Range, Signal Hill	July 7, 2002	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1

Melanotus testaceus (Melsheimer)

East Range, Natural Resource Building area	June 12, 2002	1
East Range, Natural Resource Building area	May 27, 2003	1
East Range, S. Boundary Rd., BLT	June 14, 2006	1
Quanah Range, Quanah Cr., BLT	June 14, 2006	1
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	8
West Range, Punch Bowl Road before Gruber Hill	May 28, 2004	6
West Range, Punch Bowl Road, ELETRA Rd.	May 28, 2004	13
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	2

Melanotus trapezoideus (LeConte)

East Range, Natural Resource Building Area	June 12, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2004	2
Quanah Range, Rock Cr. Area, BLT	June 14, 2006	3

Melanotus verberans (LeConte)

West Range, Punch Bowl Road before Gruber Hill	May 28, 2004	1

Meristhus cristatus Horn

Quanah Range, W. Cache Cr., Nr. Wichita NWR Border	May 29, 2004	1
West Range, West Cache Cr. @ Witchita NWR border	July 10, 2004	2

Neotrichophorus carolinensis Schaeffer

East Range, E. Cache Creek, S. Boundary Road, BLT	June 14, 2006	1
East Range, Natural Resource Building Area, BLT	July 10, 2006	4
East Range, Natural Resource Building Area, BLT	July 14, 2006	4
East Range, Nr. Geronimo Grave, BLT	August 2, 2004	3
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	5
East Range, S. Boundary Rd., BLT	June 14, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate, BLT	July 12, 2006	3
Quanah Range, Nr. Twin Gates	August 2, 2006	1
Quanah Range, Nr. Twin Gates, BLT	July 12, 2006	6
Quanah Range, Quanah Cr.	September 16, 2006	1
Quanah Range, Quanah Cr., BLT	June 14, 2006	5
Quanah Range, Quanah Cr., BLT	July 12, 2006	6
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 13, 2006	4
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	July 12, 2006	8
West Range, Lake Elmer Thomas, BLT	July 12, 2006	8
West Range, Nr. Ketch Pond, BLT	June 12, 2006	7
West Range, Nr. Strip 15	August 2, 2006	2
West Range, Nr. Strip 15, BLT	July 10, 2006	4

Neotrichophorus texanus (LeConte)

East Range	June 17, 2003	3
East Range	June 24, 2003	1

East Range	August 17, 2003	11
East Range	August 18, 2003	3
East Range, E. Cache Creek, S. Boundary Road	July 7, 2002	1
East Range, E. Cache Creek, S. Boundary Road	September 13, 2002	1
East Range, Lake George	August 12, 2003	1
East Range, Natural Resource Building area	July 6, 2002	1
East Range, Natural Resource Building area	July 7, 2002	5
East Range, Natural Resource Building area	August 9, 2002	23
East Range, Natural Resource Building area	May 27, 2003	5
East Range, Natural Resource Building area	August 19, 2003	35
East Range, Natural Resource Building Area, BLT	July 12, 2006	1
East Range, Nr. Geronimo Grave	September 16, 2006	1
East Range, Parks Hill	July 11, 2002	1
East Range, Peachtree Crossing	August 12, 2003	11
Quanah Range, Nr. Twin Gates, BLT	July 12, 2006	1
Quanah Range, Pottawatamie Pond	July 1, 2003	3
Quanah Range, Pottawatamie Pond	July 10, 2004	3
Quanah Range, Quanah Cr., BLT	July 12, 2006	2
Quanah Range, Rock Creek	July 2, 2003	1
Quanah Range, Rock Creek	July 2, 2003	3
West Range	May 24, 2003	10
West Range	June 17, 2003	3
West Range	July 19, 2003	3
West Range	August 17, 2003	6
West Range	August 18, 2003	44
West Range, Blue Beaver Cr.	July 1, 2003	7
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	June 13, 2006	4
West Range, Blue Beaver Cr., McKenzie Hill Road	July 9, 2004	5
West Range, Lake Elmer Thomas	September 13, 2002	2
West Range, Medicine Bluffs Shooting Range	June 10, 2003	1
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Nr. Ketch Pond, BLT	July 11, 2006	1
West Range, Punch Bowl Road, ELETRA Rd.	June 30, 2003	3
West Range, Punch Bowl Road, ELETRA Rd.	July 2, 2003	4
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1

Orthostethus infuscatus (Germar)

East Range	June 17, 2002	5
East Range	June 24, 2003	5
East Range, Beef Creek, BLT	June 15, 2006	5
East Range, E. Cache Creek, S. Boundary Road	July 7, 2002	8
East Range, E. Cache Creek, S. Boundary Road	August 2, 2006	2
East Range, Natural Resource Building area	July 6, 2002	1
East Range, Natural Resource Building area	July 7, 2002	6
East Range, Natural Resource Building area	May 27, 2003	1
East Range, Natural Resource Building area, BLT	July 14, 2006	2
East Range, Parks Hill	July 11, 2002	1

East Range, Peachtree Crossing	August 12, 2003	1
East Range, Signal Mountain	July 7, 2002	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond, BLT	July 12, 2006	1
Quanah Range, Quanah Creek, BLT	June 14, 2006	1
Quanah Range, Rock Creek	July 2, 2003	13
Quanah Range, Rock Creek	June 14, 2006	5
West Range	June 17, 2002	4
West Range	July 19, 2003	3
West Range, Blue Beaver Cr.	July 1, 2003	3
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 9, 2004	5
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	2
West Range, Medicine Bluffs Shooting Range	June 10, 2003	1
West Range, Punch Bowl Road, ELETRA Rd.	June 30, 2003	2
West Range, Punch Bowl Road, ELETRA Rd.	July 7, 2003	1
West Range, Trib. To Rabbit Creek	June 14, 2006	2

Paradonus pectoralis (Say)

East Range, Mixed grass	June 12, 2002	1
East Range, Road to Park Hill	May 27, 2004	1
Quanah Range, Quanah Cr., BLT	July 12, 2006	2
West Range	August 18, 2003	1
West Range, Blue Beaver Cr.	July 1, 2003	8
West Range, Blue Beaver Cr., Blue Beaver Valley Rd. Jct. Deer Cyn. Rd.		1
West Range, Blue Beaver Cr., McKenzie Hill Rd., BLT	July 12, 2006	28
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	2
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	7
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	12
West Range, West Cache Cr. @ Witchita NWR border	June 10, 2004	7

Rismethus scobinula (Candeze)

Quanah Range, Quanah Cr., BLT	July 12, 2006	3
Quanah Range, W. Cache Cr., Nr. Wichita NWR Border	May 29, 2004	1
West Range, Blue Beaver Cr.	July 1, 2003	9
West Range, Trib to Rabbit Cr., BLT	June 14, 2006	1
West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	2
West Range, West Cache Cr. @ Witchita NWR border	July 10, 2004	2

Scaptolenus lecontei Salle

East Range, E. Cache Creek, S. Boundary Road	September 13, 2002	3
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond	October 1, 2004	2
West Range, Blue Beaver Cr., Blue Beaver Valley Rd. Jct. Deer Cyn. Rd.	October 1, 2004	14
West Range, Ketch Pond	September 17, 2005	1
West Range, Lake Elmer Thomas	September 13, 2002	6
West Range, Punch Bowl Road, Medicine Cr.	October 1, 2004	13

Selonodon speratus (Fall)

East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, Mixed grass	June 12, 2002	7

Meloidae

Epicauta albida (Say)

Quanah Range, Near Twin Gates	August 2, 2006	1
Quanah Range, Near Twin Gates	September 16, 2006	1
Quanah Range, Quanah Creek	September 16, 2006	1

Epicauta atrata (Fabricius)

East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	2
East Range, Horn Pond	June 14, 2006	1
East Range, Knob Hill Rd., BLT	June 11, 2006	19
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	5
East Range, Road to Park Hill	July 8, 2002	12
East Range, Road to Park Hill	July 10, 2004	1
East Range, S. Boundary Rd.	June 14, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2004	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	June 13, 2006	3
Quanah Range, Pottawatomie Twins	June 13, 2006	1
West Range	July 7, 2002	2
West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	1
West Range, Engineer Pond	June 13, 2006	1
West Range, Punch Bowl Road, ELETRA Rd.	July 8, 2004	1
West Range, West Cache Creek@Quanah Crrek	August 24, 2003	1

Epicauta brunnea Werner

Quanah Range, Fort Sill West Cache Cr. at Wichita NWR Border	July 10, 2004	1
Quanah Range, Quanah Creek, BLT	August 2, 2006	1
Quanah Range, Quanah Creek, BLT	August 3, 2006	1
West Range	June 17, 2003	1

Epicauta callosa LeConte

East Range	August 10, 2002	1
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	September 19, 2003	8
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	3
East Range, Knob Hill Rd., BLT	June 11, 2006	1
East Range, Natural Resource Building area	July 6, 2002	1
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.	September 13, 2002	3
East Range, Road to Park Hill	July 8, 2002	1
East Range, Signal Mountain	June 11, 2002	1
East Range, Signal Mountain	July 7, 2002	1
East Range, Tall grass	June 12, 2002	1
East Range, Tall grass	September 13, 2002	2
Quanah Range, 0.5 mi. E. Falcon Gate	September 19, 2003	1

Quanah Range, Pottawatomie Twins	June 13, 2006	1
West Range	August 11, 2002	4

Epicauta confertus (Say)

East Range	August 10, 2002	2
East Range	August 11, 2002	2
East Range, Clear Lake	June 12, 2003	1
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	July 11, 2002	3
East Range, E. Cache Creek, S. Boundary Road	September 18, 2006	2
East Range, Mixed grass	September 13, 2002	1
East Range, Mixed grass, pit trap	September 13, 2002	1
East Range, Near Geronimo Grave	September 16, 2006	1
East Range, Near Hoyle Bridge	June 12, 2003	1
East Range, Road to Park Hill	July 8, 2002	3
East Range, Signal Mountain	July 7, 2002	4
East Range, Tall grass	September 13, 2002	2
East Range, Tall grass, pit trap	September 13, 2002	6
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	September 18, 2006	1
Quanah Range, Near Twin Gates	July 12, 2006	2
Quanah Range, Near Twin Gates	September 16, 2006	6
Quanah Range, Pottawatamie Pond	September 16, 2006	1
Quanah Range, Quanah Creek, BLT	August 3, 2006	1
West Range	June 3, 2002	1
West Range, Blue Beaver Cr.	September 20, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 10, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road	September 17, 2006	1
West Range, Ketch Pond	September 17, 2006	2
West Range, Lake Elmer Thomas	October 11, 2002	1
West Range, Lake Elmer Thomas	June 9, 2003	1
West Range, Short grass	June 11, 2002	1

Epicauta fabricii (LeConte)

East Range	April 26, 2002	1
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	2
East Range, Mixed grass, BLT	June 12, 2002	3
East Range, Natural Resource Building area	June 12, 2002	3
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	3
Quanah Range, 0.5 mi. E. Falcon Gate	May 28, 2004	5
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2004	5
West Range, Lake Elmer Thomas	April 25, 2003	2

Epicauta ferruginea (Say)

East Range, E. Cache Creek, S. Boundary Road	September 18, 2005	1
East Range, Natural Resource Building area	September 13, 2002	4
East Range, Near Geronimo Grave, BLT	July 10, 2006	1
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.	September 13, 2002	1
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.	September 19, 2002	2
East Range, Tall grass	September 13, 2002	2

Quanah Range, 0.5 mi. E. Falcon Gate	September 19, 2003	2
Quanah Range, 0.5 mi. E. Falcon Gate	September 16, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	September 18, 2005	5
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	August 2, 2006	17
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	September 16, 2006	9
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond	October 1, 2004	6
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond	September 18, 2005	5
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond	September 16, 2006	1
Quanah Range, Near Twin Gates	September 16, 2006	4
West Range, Blue Beaver Cr.	September 20, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road	September 17, 2005	5
West Range, Engineer Pond	October 11, 2002	1
West Range, Engineer Pond	June 13, 2006	1
West Range, Engineer Pond	August 2, 2006	1
West Range, Engineer Pond	September 16, 2006	7
West Range, Lake Elmer Thomas	September 13, 2002	1
West Range, Lake Elmer Thomas	October 11, 2002	2
West Range, Lake Elmer Thomas	October 11, 2002	1

Epicauta funebris Horn

East Range, E. Cache Creek, S. Boundary Road	July 11, 2002	6
East Range, Under Hoyle Bridge	July 7, 2002	1

Epicauta immaculata (Say)

East Range	June 24, 2002	1
East Range	June 12, 2003	1
East Range	July 17, 2003	1
East Range, Apache Gate Rd., BLT	June 12, 2002	2
East Range, E. Cache Creek, S. Boundary Road	July 10, 2006	1
East Range, Mixed grass	June 12, 2002	17
East Range, Natural Resource Building area	June 12, 2002	3
East Range, Natural Resource Building area	May 27, 2003	1
East Range, Natural Resource Building area	May 27, 2003	1
East Range, Natural Resource Building area	August 19, 2003	1
East Range, Natural Resource Building area, BLT	August 3, 2006	1
East Range, Near Geronimo Grave, BLT	August 2, 2006	1
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	1
East Range, Road to Park Hill	May 27, 2004	2
East Range, Signal Mountain	July 7, 2002	3
East Range, Tall grass	June 11, 2003	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	July 13, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond, BLT	July 12, 2006	2
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond	July 9, 2004	8
Quanah Range, Near Twin Gates	July 12, 2006	5
Quanah Range, Near Twin Gates	August 2, 2006	2

Quanah Range, Pottawatamie Pond	July 1, 2003	1
Quanah Range, Pottawatamie Pond	July 11, 2006	1
Quanah Range, Quanah Creek, BLT	August 3, 2006	6
West Range	June 3, 2002	1
West Range	May 24, 2003	3
West Range	July 19, 2003	4
West Range, Blue Beaver Cr.	July 1, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 8, 2004	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 9, 2004	1
West Range, Engineer Pond	June 11, 2002	1
West Range, Engineer Pond	June 13, 2006	2
West Range, Lake Elmer Thomas	July 7, 2002	2
West Range, Lake Elmer Thomas	May 28, 2004	1
West Range, Lake Elmer Thomas	July 12, 2006	1
West Range, Near Strip 15	August 2, 2006	1
West Range, Punch Bowl Road	June 12, 2002	1
West Range, Short grass	June 11, 2002	5

Epicauta mimetica (Horn)

East Range, Natural Resource Building area	October 11, 2002	4
West Range, Blue Beaver Cr.	September 20, 2003	1
West Range, Lake Elmer Thomas	September 13, 2002	1
West Range, Lake Elmer Thomas	October 11, 2002	1

Epicauta murina (LeConte)

East Range, E. Cache Creek, S. Boundary Road	April 25, 2003	1
West Range, ex. New Jersey Tea	April 24, 2002	1

Epicauta nigritarsis (LeConte)

East Range, Medicine Bluffs	July 3, 2003	1
East Range, Natural Resource Building area	August 19, 2003	1
East Range, Near Geronimo Grave, BLT	August 2, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	August 12, 2003	1
Quanah Range, 0.5 mi. E. Falcon Gate	May 28, 2004	20
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2004	5
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	June 13, 2006	3
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	July 12, 2006	1
Quanah Range, Near Twin Gates	July 12, 2006	9
Quanah Range, Near Twin Gates	August 2, 2006	6
Quanah Range, Pottawatamie Pond	July 10, 2004	3
Quanah Range, Quanah Creek, BLT	August 3, 2006	12
West Range	July 19, 2003	1
West Range, 4 Mile Crossing	July 10, 2002	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	2
West Range, Engineer Pond	July 12, 2006	4
West Range, Near Strip 15	July 13, 2006	3

Epicauta occidentalis Werner

East Range	June 17, 2003	2
East Range	June 24, 2003	1
East Range	August 17, 2003	1
East Range, 0.5 mi. E. Parks Hill	May 30, 2004	1
East Range, E. Cache Creek, S. Boundary Road	September 26, 2003	1
East Range, Medicine Bluffs	July 3, 2003	2
East Range, Natural Resource Building area	June 11, 2002	1
East Range, Natural Resource Building area	August 19, 2003	2
East Range, Natural Resource Building area, BLT	July 14, 2006	1
East Range, Natural Resource Building area, BLT	August 3, 2006	2
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.	July 7, 2002	2
East Range, Road to Park Hill	July 8, 2002	1
Quanah Range, 0.5 mi. E. Falcon Gate	May 29, 2004	3
Quanah Range, Near Twin Gates	July 12, 2006	2
Quanah Range, Near Twin Gates	August 2, 2006	4
Quanah Range, Near Twin Gates	September 16, 2006	11
Quanah Range, Pottawatamie Pond	July 1, 2003	3
Quanah Range, Pottawatamie Pond	July 10, 2004	2
Quanah Range, Quanah Creek, BLT	August 3, 2006	5
West Range	August 18, 2003	2
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	1
West Range, Ketch Pond	July 10, 2006	1
West Range, Near Strip 15	July 10, 2006	1

Epicauta pensylvanica (DeGeer)

East Range, E. Cache Creek, S. Boundary Road	September 19, 2003	21
East Range, E. Cache Creek, S. Boundary Road	September 29, 2003	1
East Range, E. Cache Creek, S. Boundary Road	September 18, 2005	3
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	4
East Range, Lake George	September 19, 2003	19
East Range, Mixed grass	September 13, 2002	4
East Range, Natural Resource Building area	September 13, 2002	2
East Range, Off Elgin Rd. S. Frisco Ridge	September 21, 2003	2
East Range, Off Elgin Rd. S. Frisco Ridge	September 21, 2003	1
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.	September 27, 2003	1
East Range, Tall grass	September 13, 2002	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	September 19, 2003	5
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	October 1, 2004	9
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond	September 18, 2005	2
Quanah Range, Near Twin Gates	September 16, 2006	4
Quanah Range, Pottawatamie Pond	September 20, 2003	7
Quanah Range, Rock Creek	September 20, 2003	3
West Range, Blue Beaver Cr.	September 20, 2003	5
West Range, Blue Beaver Cr., McKenzie Hill Road	September 17, 2005	8

West Range, Engineer Pond	October 11, 2002	2
West Range, Engineer Pond	September 16, 2006	1
West Range, Ketch Pond	September 18, 2005	16
West Range, Lake Elmer Thomas	October 11, 2002	1
West Range, Lake Elmer Thomas	September 19, 2003	2

Epicauta sericans LeConte

East Range, E. Cache Creek, S. Boundary Road	July 11, 2002	7
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	4
East Range, E. Cache Creek, S. Boundary Road	July 10, 2004	1
East Range, E. Cache Creek, S. Boundary Road	September 18, 2005	1
East Range, E. Cache Creek, S. Boundary Road	June 13, 2006	3
East Range, E. Cache Creek, S. Boundary Road, BLT	June 14, 2006	1
East Range, Near Geronimo Grave	June 10, 2003	1
East Range, Near Hoyle Bridge	June 12, 2003	1
East Range, Parks Hill	June 12, 2003	2
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd., Malaise Trap	July 10, 2002	2
East Range, Road to Park Hill	July 8, 2002	1
East Range, Road to Park Hill	May 27, 2004	1
East Range, S. Boundary Road, Arbuckle Hill	July 10, 2006	3
East Range, S. Boundary Road, Arbuckle Hill	August 1, 2006	2
East Range, Signal Mountain	June 12, 2002	1
East Range, Signal Mountain	July 7, 2002	2
East Range, Tall grass	June 12, 2002	1
East Range, Tall grass	June 11, 2003	1
Quanah Range, 0.5 mi. E. Falcon Gate	July 1, 2003	1
Quanah Range, Near Twin Gates	July 12, 2006	1
West Range	June 3, 2002	3
West Range	June 11, 2002	1
West Range	August 11, 2002	2
West Range, Blue Beaver Cr., McKenzie Hill Road	June 10, 2002	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	1
West Range, Ketch Pond	June 13, 2006	1
West Range, Lake Elmer Thomas	July 7, 2002	1
West Range, Punch Bowl Road, ELETRA Rd.	June 30, 2003	1
West Range, Short grass	June 11, 2002	4

Nemognatha lurida LeConte

West Range, Ketch Pond	July 10, 2006	3

Nemognatha piazata (Fabricius)

East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	1
East Range, Mixed grass	June 12, 2002	1
East Range, Signal Mountain	June 12, 2002	1
West Range, Short grass	June 11, 2002	11

Nemognatha sparsa LeConte

East Range, E. Cache Creek, S. Boundary Road	September 19, 2003	1
West Range, Ketch Pond	September 18, 2005	2

Pyrota concinna	Casey		
East Range		August 17, 2003	2
Quanah Range, Rock Creek		September 20, 2003	1
Pyrota deceptiva	Selander		
East Range, E. Cache Creek, S. Boundary Road		September 18, 2005	1
East Range, E. Cache Creek, S. Boundary Road		September 16, 2006	1
East Range, Natural Resource Building area		September 13, 2002	1
Quanah Range, Near Twin Gates		September 16, 2006	1
Quanah Range, Quanah Creek		September 16, 2006	3
Quanah Range, Rock Creek		September 16, 2006	1
West Range, Near Strip 15		September 16, 2006	1
Pyrota lineata texana	(Olivier)		
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.		September 13, 2002	1
Pyrota perversa	Dillon		
East Range, E. Cache Creek, S. Boundary Road		September 19, 2003	38
East Range, E. Cache Creek, S. Boundary Road		September 18, 2005	12
East Range, Lake George		September 19, 2003	1
East Range, Natural Resource Building area		August 19, 2003	1
East Range, Off Elgin Rd. S. Frisco Ridge		September 21, 2003	39
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.		September 13, 2002	43
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.		September 18, 2002	1
East Range, Pig Farm, E. Cache Cr., S. Boundary Rd.		October 12, 2002	16
Quanah Range, 0.5 mi. E. Falcon Gate		September 19, 2003	3
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond		October 1, 2004	2
West Range		August 18, 2003	1
West Range, Ketch Pond		September 18, 2005	44
Zonitis sayi	Wickham		
Quanah Range, Near Twin Gates		September 16, 2006	1

Diptera

Calliphoridae

Calliphora coloradensis	Hough		
East Range, E. Cache Creek, S. Boundary Road		April 7, 2006	1
West Range, Lake Elmer Thomas		April 9, 2006	2
Cochliomyia macellaria	(Fabricius)		
East Range, Beef Creek		June 15, 2006	1
East Range, Medicine Creek, N. Boundary Rd.		July 10, 2006	1
East Range, Natural Resource Building area		July 10, 2006	9
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond		June 13, 2006	8
West Range, Ketch Pond		July 9, 2006	26
Lucilia coeruleiviridis	Macquart		
East Range, Beef Creek, BLT		August 2, 2006	1

East Range, E. Cache Creek, S. Boundary Road	June 13, 2006	1
East Range, E. Cache Creek, S. Boundary Road, Malaise trap	September 17, 2005	7
East Range, Medicine Creek, N. Boundary Rd.	August 2, 2006	2
East Range, Natural Resource Building area	April 24, 2006	1
East Range, Natural Resource Building area	July 10, 2006	2
East Range, Natural Resource Building area	August 19, 2006	1
East Range, Natural Resource Building area	September 16, 2006	5
East Range, Off Elgin Rd. S. Frisco Ridge	May 27, 2004	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	June 13, 2006	3
West Range, Ketch Pond	June 12, 2006	1
West Range, Ketch Pond	July 9, 2006	4

Lucilia cuprina (Wiedemann)

East Range, Medicine Creek, N. Boundary Rd.	April 8, 2006	1
East Range, Natural Resource Building area	September 16, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	April 8, 2006	1

Lucilia mexicana Macquart

East Range, Natural Resource Building area	September 16, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate Jackson Hole Pond	June 13, 2006	1
West Range, ex. New Jersey Tea	April 26, 2006	2

Phormia regina (Meigen)

East Range, E. Cache Creek, S. Boundary Road	April 7, 2006	13
East Range, Natural Resource Building area	April 7, 2006	5
West Range, Lake Elmer Thomas	April 9, 2006	17

Culicidae

Aedes vexans (Meigen)

East Range, Beef Creek	June 15, 2006	2
East Range, Beef Creek, BLT	August 2, 2006	4
East Range, E. Cache Creek, S. Boundary Road	April 7, 2006	5
East Range, E. Cache Creek, S. Boundary Road	June 14, 2006	3
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	3
East Range, Medicine Creek, N. Boundary Rd., CDC Trap	June 15, 2006	6
East Range, Natural Resource Building area	April 7, 2006	1
East Range, Natural Resource Building area	June 12, 2006	2
East Range, Near Geronimo Grave	September 16, 2006	10
East Range, S. Bound Rd., N34-39.126 W098-38.63	June 14, 2006	3
Quanah Range, Near Twin Gates	September 16, 2006	8
Quanah Range, Quanah Creek	September 16, 2006	14
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	9
Quanah Range, Quanah Creek, CDC Trap	July 12, 2006	5
Quanah Range, Rock Creek, CDC Trap	June 14, 2006	1
West Range, Below Ketch Pond, CDC Trap	July 12, 2006	4
West Range, Lake Elmer Thomas	April 8, 2006	4
West Range, LETRA Sewage lagoons, CDC Trap	July 13, 2006	13
West Range, Medicine Cr., N. Boundary Rd.	July 10, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	August 2, 2006	4

West Range, Medicine Cr., N. Boundary Rd.	September 16, 2006	1
West Range, Medicine Cr., N. Boundary Rd., CDC trap	June 15, 2006	1
West Range, Trib. To Rabbit Creek	June 14, 2006	6
Anopheles crucians Wiedemann		
West Range, Blue Beaver Cr., McKenzie Hill Road, CDC Trap	July 13, 2006	1
West Range, Medicine Cr., N. Boundary Rd., CDC trap	August 2, 2006	1
Anopheles punctipennis (Say)		
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	1
Quanah Range, Rock Creek	July 12, 2006	1
West Range, Below Ketch Pond, CDC Trap	July 12, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 13, 2006	1
West Range, LETRA Sewage lagoons, CDC Trap	July 13, 2006	1
West Range, Medicine Cr., N. Boundary Rd., CDC trap	June 15, 2006	2
Coquillettidia perturbans (Walker)		
Quanah Range, Quanah Creek, CDC Trap	July 12, 2006	1
Culex erraticus (Dyar and Knab)		
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	4
Quanah Range, 0.5 mi. E. Falcon Gate	July 12, 2006	1
Quanah Range, Near Twin Gates	September 16, 2006	1
Quanah Range, Quanah Creek	September 16, 2006	1
West Range, Below Ketch Pond, CDC Trap	July 12, 2006	27
West Range, LETRA Sewage lagoons, CDC Trap	July 13, 2006	13
West Range, Medicine Cr., N. Boundary Rd.	September 16, 2006	35
West Range, Medicine Cr., N. Boundary Rd., CDC trap	June 15, 2006	1
West Range, Medicine Cr., N. Boundary Rd., CDC trap	July 10, 2006	30
West Range, Medicine Cr., N. Boundary Rd., CDC trap	August 2, 2006	48
West Range, Medicine Cr., N. Boundary Rd.	August 2, 2006	518
Culex quinquefasciatus Say		
East Range, Near Geronimo Grave	September 16, 2006	1
West Range, Near Twin Gates	September 16, 2006	7
Culex restuans Theobald		
Quanah Range, Quanah Creek, CDC Trap	July 12, 2006	1
Culex salinarius Coquillett		
East Range, Near Geronimo Grave	September 16, 2006	1
Quanah Range, Near Twin Gates	September 16, 2006	1
Quanah Range, Quanah Creek	September 16, 2006	2
Quanah Range, Quanah Creek, CDC Trap	July 12, 2006	1
Quanah Range, Rock Creek	July 12, 2006	1
West Range, Below Ketch Pond, CDC Trap	July 12, 2006	1
West Range, LETRA Sewage lagoons, CDC Trap	July 13, 2006	3
West Range, Medicine Cr., N. Boundary Rd.	July 10, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	August 2, 2006	3
West Range, Medicine Cr., N. Boundary Rd.	September 16, 2006	1

Culex sp.		
East Range, Small Pond Near Rattler off S. Boundary Rd.	April 8, 2006	1
Culex tarsalis Coquillett		
East Range, Beef Creek, BLT	August 2, 2006	2
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	5
East Range, E. Cache Creek, S. Boundary Road, CDC Trap	August 2, 2006	2
East Range, Medicine Creek, N. Boundary Rd., CDC Trap	July 10, 2006	4
East Range, Near Geronimo Grave	September 16, 2006	8
Quanah Range, Near Twin Gates	September 16, 2006	6
Quanah Range, Quanah Creek	September 16, 2006	2
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	1
Quanah Range, Quanah Creek, CDC Trap	July 12, 2006	2
Quanah Range, Rock Creek, CDC Trap	June 14, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 13, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	August 2, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	September 16, 2006	2
West Range, Medicine Cr., N. Boundary Rd., CDC trap	June 15, 2006	2
West Range, Medicine Cr., N. Boundary Rd., CDC trap	August 2, 2006	32
West Range, Trib. To Rabbit Creek, CDC Trap	July 10, 2006	2
Ochlerotatus canadensis canadensis (Theobald)		
East Range, Natural Resource Building area	June 12, 2006	1
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	1
Ochlerotatus epactius (Dyar and Knab)		
West Range, Blue Beaver Cr., McKenzie Hill Road, CDC Trap	July 13, 2006	2
Ochlerotatus hendersoni (Cockerell)		
Quanah Range, Near Twin Gates	September 16, 2006	1
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	3
Ochlerotatus nigromaculis (Ludlow)		
West Range, Blue Beaver Cr., McKenzie Hill Road, CDC Trap	July 13, 2006	2
Ochlerotatus sollicitans (Walker)		
West Range, Below Ketch Pond, CDC Trap	July 12, 2006	1
West Range, Ketch Pond	September 17, 2005	1
Ochlerotatus thelcter (Dyar)		
Quanah Range, Near Twin Gates	September 16, 2006	1
Ochlerotatus triseriatus (Say)		
East Range, E. Cache Creek, S. Boundary Road	June 14, 2006	1
Quanah Range, Near Twin Gates	September 16, 2006	1
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	7
Quanah Range, Quanah Creek, CDC Trap	July 12, 2006	2
Quanah Range, Rock Creek, CDC Trap	June 14, 2006	1
West Range, Trib. To Rabbit Creek, CDC Trap	July 10, 2006	1

Ochlerotatus trivittatus (Coquillett)

East Range, E. Cache Creek, S. Boundary Road	April 7, 2006	5
Quanah Range, 0.5 mi. E. Falcon Gate	July 12, 2006	1
Quanah Range, Quanah Creek	September 16, 2006	1
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	4
Quanah Range, Quanah Creek, CDC Trap	July 12, 2006	3
Quanah Range, Rock Creek, CDC Trap	June 14, 2006	3
West Range, Trib. To Rabbit Creek, CDC Trap	July 10, 2006	1

Psorophora ciliata (Fabricius)

Craig Hill #1 shallow pool	September 16, 2005	36
East Range, Beef Creek	June 15, 2006	1
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	1
East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	1
East Range, Near Geronimo Grave	September 16, 2006	1
Quanah Range, Near Twin Gates	September 16, 2006	5
Quanah Range, Pottawatamie Pond	July 10, 2004	3
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	2
Quanah Range, Rock Creek, CDC Trap	June 14, 2006	1

Psorophora columbiae (Dyar and Knab)

East Range, Medicine Creek, N. Boundary Rd., CDC Trap	July 10, 2006	1
Quanah Range, Near Twin Gates	September 16, 2006	1
Quanah Range, Quanah Creek, CDC Trap	June 14, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road, CDC Trap	July 13, 2006	1
West Range, Trib. To Rabbit Creek, CDC Trap	July 10, 2006	1

Psorophora cyanescens (Coquillett)

East Range, E. Cache Creek, S. Boundary Road	September 16, 2006	2
East Range, Near Geronimo Grave	September 16, 2006	13
Quanah Range, Near Twin Gates	September 16, 2006	9
Quanah Range, Quanah Creek	September 16, 2006	2
Quanah Range, Rock Creek, CDC Trap	June 14, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	September 16, 2006	1

Psorophora discolor (Coquillett)

East Range, E. Cache Creek, S. Boundary Road	June 14, 2006	1
West Range, Trib. To Rabbit Creek, CDC Trap	July 10, 2006	1

Psorophora sp.

East Range, Overflow from Horn Pond, S. Boundary Rd.	April 8, 2006	15
West Range, Ketch Pond	April 6, 2006	13
West Range, Ketch Pond	April 8, 2006	3
West Range, Lake Elmer Thomas	April 8, 2006	7

Stratiomyidae

Hedriodiscus sp.

East Range	September 13, 2002	1

Hedriodiscus vertebratus	(Say)		
Shinnecock Pond, Malaise Trap		May 18, 2000	1
West Range, Ketch Pond		June 12, 2006	1
Hermetia aurata	Bellardi		
East Range, E. Cache Creek, S. Boundary Road		May 30, 2004	2
East Range, Natural Resource Building area		June 12, 2002	1
East Range, Parks Hill		June 12, 2003	1
Quanah Range, S. Site, W. Cache Cr.		May 18, 2000	1
West Range, West Cache Creek@Quanah Crrek		April 24, 2003	1
Hoplitimyia constans	(Loew)		
East Range, Near Geronimo Grave		July 10, 2006	1
East Range, S. Boundary Rd.		September 27, 2003	1
Myxosargus texensis	Curran		
Fort Sill		May 16, 2000	1
Nemotelus glaber	Loew		
W. Cache Cr., Malaise Trap		September 26, 1999	2
Nemotelus variabilis	Hanson		
9 Mile Pond, Malaise Trap		May 28, 2000	1
Odontomyia cincta	Olivier		
West Range, Blue Beaver Cr., McKenzie Hill Road		June 12, 2006	1
Orthonevra nitida	(Wiedemann)		
Shinnecock Pond, Malaise Trap		September 26, 1999	2
Psellidotus fulvicornis	(Curran)		
Quanah Range, 0.5 mi. E. Falcon Gate		May 28, 2004	1
Psellidotus sp.			
East Range, Clear Lake		June 12, 2003	1
Ptecticus trivittatus	(Say)		
East Range, Near Geronimo Grave, BLT		July 10, 2006	1
Sargus cupratius	(Linnaeus)		
Lark Pond, Malaise Trap		May 28, 2000	1
Stratiomyia sp.			
East Range		April 24, 2002	3
East Range		June 27, 2002	2
East Range		April 26, 2002	4

Syrphidae

Allograpta exoticus	(Wiedemann)		
East Range, Natural Resource Building area		June 12, 2002	1
Allograpta obliqua	(Say)		
East Range, Natural Resource Building area, malaise trap		September 17, 2005	1
Quanah Range, 0.5 mi. E. Falcon Gate		August 12, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road		July 12, 2006	1

Chalcosyrphus metallica	Wiedemann		
West Range, Medicine Cr., N. Boundary Rd.		June 12, 2006	1
Chrysogaster antitheus	Walker		
West Range		April 26, 2002	1
Copestylum vittatum	Thompson		
West Range, Near Ketch Pond		June 12, 2006	1
West Range, Near Ketch Pond, malaise trap		June 12, 2006	1
Eristalis stipator	Osten Sacken		
East Range, E. Cache Creek, S. Boundary Road		September 13, 2002	2
East Range, Natural Resource Building area		October 11, 2002	1
East Range, Tall grass		September 13, 2002	2
West Range		October 12, 2002	1
West Range, Ketch Pond		September 17, 2005	7
Helophilus latifrons	Loew		
Quanah Range, Near Twin Gates		September 16, 2006	1
Mallota bautias	(Walker)		
East Range		April 24, 2002	1
Quanah Range, 0.5 mi. E. Falcon Gate		May 28, 2004	1
Mesograpta marginata	(Say)		
N. Site, W. Cache Cr., Malaise Trap		September 26, 1999	1
Microdon baliopterus	Loew		
East Range, Off Elgin Rd. S. Frisco Ridge		May 27, 2004	2
West Range, Near Ketch Pond		July 11, 2006	1
Microdon laetus	Loew		
West Range, Lake Elmer Thomas		October 11, 2002	1
Microdon rufipes	Macquart		
East Range, Near Geronimo Grave		May 27, 2004	1
Ocyptamus fuscipennis	(Say)		
West Range, Lake Elmer Thomas		July 2, 2003	1
Palpada agrorum	(Fabricius)		
West Range, Lake Elmer Thomas		July 2, 2003	1
Palpada alhambra	Hull		
West Range, Blue Beaver Cr., McKenzie Hill Road		July 13, 2006	2
Palpada vinetorum	(Fabricius)		
West Range, Blue Beaver Cr., McKenzie Hill Road		July 12, 2006	1
Paragus haemorrhous	Meigen		
Medicine Cr., 10 mi. Crossing, Malaise Trap		October 3, 1999	1
Platycheirus quadrata	(Say)		
West Range, Blue Beaver Cr., McKenzie Hill Road		April 7, 2006	1
West Range, Medicine Cr., N. Boundary Rd.		April 8, 2006	1

Pseudodoros clavatus	(Fabricius)		
West Range, Ketch Pond		July 10, 2006	2
West Range, Ketch Pond		July 11, 2006	3
West Range, Ketch Pond		July 12, 2006	3
Spaerophoria contigua	Macquart		
Quanah Range, Near Twin Gates		September 16, 2006	1
Spilomyia longicornis	Loew		
West Range, Lake Elmer Thomas		October 11, 2002	1
Syritta pipiens	(Linnaeus)		
East Range, 0.5 mi. E. Parks Hill		May 30, 2004	1
Shinnecock Pond, Malaise Trap		September 26, 1999	1
West Range, Blue Beaver Cr., McKenzie Hill Road		July 12, 2006	1
Toxomerus marginatus	(Say)		
East Range, Near Geronimo Grave		September 18, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond		September 16, 2005	1
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond		September 18, 2005	2
Quanah Range, Near Twin Gates		September 16, 2006	3
Quanah Range, Quanah Creek		July 12, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road, CDC Trap		July 13, 2006	1
West Range, Lake Elmer Thomas		September 16, 2006	18
West Range, Near Ketch Pond		July 10, 2006	2
West Range, Near Ketch Pond		July 11, 2006	3
West Range, Near Ketch Pond		July 12, 2006	2

Tabanidae

Anacimas dodgei	(Whitney)		
West Range		April 24, 2002	2
Chlorotabanus crepuscularis	(Bequaert)		
East Range, Near Geronimo Grave, BLT		July 10, 2006	1
West Range, Trib. To Rabbit Creek, BLT		June 14, 2006	1
Chrysops callidus	Osten Sacken		
East Range, Horn Pond		June 14, 2006	1
East Range, Malaise Trap, Natural Resource Building area		June 12, 2006	1
West Range, Lake Elmer Thomas		June 9, 2003	1
West Range, Lake Elmer Thomas		July 12, 2006	1
West Range, Medicine Bluffs Shooting Range		June 10, 2003	1
West Range, Medicine Cr., N. Boundary Rd.		June 12, 2006	1
West Range, Nr. Ketch Pond		July 11, 2006	1
West Range, Trib. To Rabbit Cr., CDC Trap		June 14, 2006	1
Chrysops flavidus	Wiedemann		
East Range, 0.5 mi. E. Parks Hill		May 30, 2004	2
East Range, Natural Resource Building area		July 10, 2006	1

East Range, Near Geronimo Grave	September 16, 2006	1
East Range, Nr. Geronimo Grave	September 16, 2006	2
East Range, Nr. Natural Resource Building, BLT	August 3, 2006	2
West Range	August 18, 2003	1
West Range, Ketch Pond	June 12, 2006	1
West Range, Nr. Ketch Pond	July 11, 2006	1
Chrysops pikei Whitney		
East Range, Nr. Geronimo Grave	September 16, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Rd.	May 28, 2004	1
Chrysops sequax Williston		
West Range, Blue Beaver Cr., McKenzie Hill Rd.	June 12, 2006	7
West Range, Blue Beaver Cr., McKenzie Hill Rd.	August 2, 2006	1
West Range, Lake Elmer Thomas	July 12, 2006	1
Esenbeckia incisuralus (Say)		
East Range, E. Cache Creek, S. Boundary Road	June 11, 2002	1
East Range, Mixed grass	June 12, 2002	1
East Range, Natural Resource Building area	May 27, 2003	1
Quanah Range, Pottawatamie Pond	July 1, 2003	1
West Range, Punch Bowl Road before Gruber Hill	May 28, 2004	4
West Range, Punch Bowl Road, ELETRA Rd.	July 1, 2003	1
West Range, Short grass	June 11, 2002	1
Hybomitra lasiophthalmus (Macquart)		
East Range	April 24, 2002	1
Tabanus abactor Philip		
East Range, E. Cache Creek, S. Boundary Road	May 30, 2004	1
East Range, E. Cache Creek, S. Boundary Road	July 10, 2004	1
East Range, E. Cache Creek, S. Boundary Road, Malaise trap	September 17, 2005	4
East Range, Knob Hill Rd.	September 13, 2002	1
East Range, Medicine Bluffs	July 8, 2004	1
East Range, Natural Resource Building area	June 12, 2002	1
East Range, Natural Resource Building area, malaise trap	September 17, 2005	5
Quanah Range, Pottawatamie Pond	July 9, 2004	2
Quanah Range, Rock Creek	July 2, 2003	1
Quanah Range, Rock Creek	August 12, 2003	2
Quanah Range, West Cache Cr.	August 12, 2004	1
West Range	August 18, 2003	1
West Range	May 24, 2004	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 1, 2003	1
West Range, Engineer Pond	June 11, 2002	1
West Range, Jct. Deer Cyn. Rd., LETRA Rd.	July 9, 2004	1
West Range, Ketch Pond	September 20, 2003	1
West Range, Lake Elmer Thomas	June 12, 2003	2
West Range, Lake Elmer Thomas	June 13, 2003	1
West Range, Lake Elmer Thomas	July 2, 2003	1
West Range, Short grass	June 11, 2002	1

West Range, West Cache Cr. @ Witchita NWR border	May 29, 2004	4
Tabanus atratus Fabricius		
East Range, E. Cache Creek, S. Boundary Road	July 11, 2002	1
East Range, Mixed grass	September 13, 2002	2
West Range, Blue Beaver Cr., McKenzie Hill Road	October 11, 2002	1
West Range, Engineer Pond	September 19, 2003	2
Tabanus cymatophorus Osten Sacken		
Quanah Range, Rock Creek	September 20, 2003	1
Tabanus dorsifer Walker		
West Range, Nr. Ketch Pond, BLT	June 12, 2006	1
Tabanus equalis Hine		
East Range, E. Cache Creek, S. Boundary Road	June 12, 2002	3
East Range, E. Cache Creek, S. Boundary Road	July 2, 2003	1
East Range, Natural Resource Building area	May 27, 2003	1
West Range	May 24, 2003	2
West Range	June 17, 2003	1
West Range	July 19, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road	July 12, 2006	3
West Range, Blue Beaver Cr., McKenzie Hill Road	July 13, 2006	1
West Range, Punch Bowl Road, ELETRA Rd.	July 1, 2003	1
Tabanus mularis Stone		
East Range, Mixed grass	June 12, 2002	9
East Range, Natural Resource Building area	June 12, 2002	1
West Range, Short grass	June 11, 2002	2
Tabanus rufofrator Walker		
East Range, Beef Cr.	June 15, 2006	1
Tabanus stygius Say		
West Range, Lake Elmer Thomas	June 12, 2003	1
Tabanus sublongus Bellardi		
East Range, Knob Hill Rd. Area	September 13, 2002	1
East Range, Natural Resource Building area	June 12, 2006	15
East Range, Nr. Geronomo Grave	July 10, 2006	2
East Range, Nr. Geronomo Grave	August 2, 2006	3
Quanah Range, 0.5 mi. E. Falcon Gate, Jackson Hole Pond	August 2, 2006	1
Quanah Range, Nr. Twin Gates	July 12, 2006	8
Quanah Range, Quanah Creek	July 12, 2006	12
West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	1
West Range, Blue Beaver Cr., McKenzie Hill Road, BLT	July 12, 2006	5
West Range, Lake Elmer Thomas	July 12, 2006	8
West Range, Lake Elmer Thomas	September 16, 2006	2
West Range, Medicine Cr., North Boundary Rd.	June 12, 2006	1
West Range, Medicine Cr., North Boundary Rd.	August 2, 2006	3

West Range, Nr. Ketch Pond	June 12, 2006	3
West Range, Nr. Ketch Pond	July 11, 2006	2
West Range, Short grass	June 11, 2002	1

Tabanus subsimilus Bellardi

East Range, 0.5 mi. E. Parks Hill	May 30, 2004	19
East Range, Medicine Bluffs	July 3, 2003	4
East Range, Medicine Creek, N. Boundary Rd., BLT	June 12, 2003	1
East Range, Natural Resource Building area	June 12, 2006	17
East Range, Nr. Geronimo Grave	August 2, 2006	11
East Range, Nr. Geronimo Grave	September 16, 2006	1
East Range, Nr. Geronimo Grave, BLT	July 10, 2006	2
East Range, Nr. Natural Resource Building	May 27, 2003	1
Natural Resource Building	June 12, 2006	1
Quanah Range, 0.5 mi. E. Falcon Gate	August 2, 2006	1
Quanah Range, Near Twin Gates	July 12, 2006	2
Quanah Range, Nr. Twin Gates	July 12, 2006	1
Quanah Range, Pottawatamie Pond	July 1, 2003	1
Quanah Range, Quanah Creek	July 12, 2006	1
Quanah Range, Quanah Creek	August 3, 2006	3
West Range	June 17, 2003	3
West Range, 10 Mile crossing	April 27, 2003	1
West Range, Blue Beaver Cr., McKenzie Hill Road	June 12, 2006	3
West Range, Ketch Pond	June 11, 2006	3
West Range, Ketch Pond	June 12, 2006	8
West Range, Lake Elmer Thomas	July 12, 2006	1
West Range, Lake Elmer Thomas	July 12, 2006	5
West Range, Medicine Cr., N. Boundary Rd.	June 12, 2006	1
West Range, Medicine Cr., N. Boundary Rd.	August 2, 2006	4
West Range, Nr. Ketch Pond	June 12, 2006	1
West Range, Nr. Ketch Pond	July 10, 2006	1
West Range, Nr. Ketch Pond	July 11, 2006	3
West Range, Punch Bowl Road before Gruber Hill	May 28, 2004	2
West Range, West Cache Creek @ Omaha Creek	April 24, 2003	1

Tabanus sulcifrons Macquart

East Range, E. Cache Creek, S. Boundary Road	July 16, 2002	1
East Range, Knob Hill Rd.	September 13, 2005	2
East Range, Natural Resource Building area, malaise trap	September 17, 2005	1
Quanah Range, 0.5 mi. E. Falcon Gate	September 13, 2005	1

	West Range	August 18, 2003	1
	West Range, Engineer Pond	August 2, 2006	1
	West Range, Ketch Pond	September 17, 2005	1
Tabanus trimaculatus	Beauvois		
	East Range, Natural Resource Building area	June 12, 2006	1

Appendix C. Additions to the Aquatic Hemiptera (True Bugs) of Fort Sill, Comanche Co., Oklahoma.

Of the 15 species of Gerridae (water striders) recorded from Oklahoma six species or 40% of the known Oklahoma fauna are now known from Fort Sill. The family Saldidae, the shore bugs, was not reported by Zuellig et al. (2006) in their review of the aquatic insects of Fort Sill, Oklahoma. *Saldula confluenta* is a species that is not commonly collected, because it often lives on logs or stones in low numbers, and is very flightly. This shore bug is known from the northeastern U.S. to Montana, Colorado east to South Carolina, west to Texas. Dr. John T. Polhemus, Englewood, Colorado provided the identification of this shorebug.

Hemiptera				
	Gerridae			
		Limnoporus canaliculatus (Say)		
		West Range, Medicine Creek, N.	1	June 12, 2006
	Saldidae			
		Saldula confluenta (Say)		
		West Range, Near Ketch Pond, BLT	1	July 11, 2006

Literature Cited

Zuellig, R. E., B. C. Kondratieff, J. P. Schmidt, R. S. Durfee, D. E. Ruiter, and I. E. Prather. 2006. An annotated list of Aquatic insects of Fort Sill, Oklahoma, excluding Diptera with notes on several new state records. Journal of the Kansas Entomological Society. 79: 34-54.

Appendix D. Additions to the Stinkbugs (Hemiptera: Pentatomidae) of Fort Sill, Comanche Co., Oklahoma.

Previously 21 species of stinkbugs were recorded from Fort Sill. The 26 species now known from Fort Sill represent 47% of the recorded Oklahoma fauna. *Chlorochroa persimilis* Horvath and *Holcostethus abbreviatus* Uhler are new state records.

Hemiptera

Pentatomidae

Chlorochroa persimilis Horvath			
	Quanah Range, Near Twin Gates	1	September 16, 2006
	Quanah Range, Quanah Creek	1	August 3, 2006
	West Range, 0.5 mi. E. Falcon Gate	1	July 11, 2006
Euschistus ictericus Linnaeus			
	East Range, E. Cache Creek, S. Boundary Road	1	August 1, 2006
Holcostethus abbreviatus Uhler			
	Quanah Range, Quanah Creek	1	April 7, 2006
Mormidea lugens (Fabricius)			
	West Range, Ketch Pond	1	June 17, 2006
Stiretrus anchorago (Fabricius)			
	West Range, Near Ketch Pond	1	July 9, 2006

Appendix E. Additions to the Checklist of Ground Beetles (Coleoptera: Carabidae) of Fort Sill, Comanche Co., Oklahoma.

As of 2006, 116 species of ground beetles (excluding the Cicindelidae, tiger beetles) are recorded from Fort Sill, representing nearly 39% of the known Oklahoma fauna. The following ground beetles are recorded as new state records for Oklahoma: *Lebia ornata* Say, *Pentagonica picticornis* Bates, *Pseudaptinus tenuicollis* (LeConte), and *Tetragonoderus fasciata* (Haldeman).

Coleoptera

Carabidae

Amphasia interstitalis	(Say)		
	East Range, Sitting Bear Creek	4	July 9, 2004
	Quanah Range, Rock Creek	2	September 16,
Bradycellus rupestris	(Say)		
	East Range, Natural Resource Building	1	June 12, 2006
Chlaenius solitarius	Say		
	East Range, Above Natural Resource Building,	1	June 10, 2006
Clivina bipustulatus	(Fabricius)		
	Quanah Range, 0.5 mi. E. Falcon Gate	2	July 12, 2006
	Quanah Range, Near Twin Gates, BLT	1	July 12, 2006
	Quanah Range, Quanah Creek	1	July 12, 2006
	Quanah Range, Rock Creek, CDC Trap	1	June 14, 2006
	West Range, Quanah Creek	1	July 12, 2006
Dyschiriodes campicola	Lindroth		
	West Range, Blue Beaver Cr., McKenzie Hill Road	1	July 12, 2006
Elaphropus sp.			
	West Range, Blue Beaver Cr., McKenzie Hill Road	1	July 12, 2006
Lebia atriventris	Say		
	East Range, Above Natural Resource Building	2	July 10, 2006
Lebia ornata	Say		
	East Range, Near Geronimo Grave	1	August 2, 2006
	Quanah Range, Near Twin Gates	2	August 2, 2006
	Quanah Range, Quanah Creek	1	July 12, 2006
	West Range, Blue Beaver Cr., McKenzie Hill Road	1	July 12, 2006
	West Range, Engineer Pond	1	September 16, 2006
	West Range, Near Ketch Pond	1	July 11, 2006
	West Range, Near Strip 15	1	August 2, 2006
Lebia vittatus	(Fabricius)		
	Quanah Range, Near Twin Gates	1	August 2, 2006
Paratachys proximus	(Say)		
	East Range, S. Boundary Road	1	June 14, 2006
Pentagonica picticornis	Bates		
	Quanah Range, Quanah Creek	1	July 12, 2006
Pseudaptinus tenuicollis	(LeConte)		

	East Range, Near Geronimo Grave	1	August 2, 2006
Tetragonoderus fasciata (Haldeman)			
	West Range, Engineer Pond	1	July 12, 2006
Thalpius sp. B			
	East Range, Near Geronimo Grave	5	August 2, 2006
	Quanah Range, Near Twin Gates	1	July 12, 2006
	Quanah Range, Near Twin Gates	3	August 2, 2006
	West Range, Engineer Pond	1	July 12, 2006
	West Range, Near Strip 15	1	July 10, 2006

Appendix F. Additions to the Aquatic Coleoptera of Fort Sill, Comanche Co., Oklahoma.

As of 2006, 29 species of Dytiscidae (76% of the known Oklahoma fauna) are recorded. As of 2006 33 species of Hydrophiloidea (representing 60% of the known Oklahoma species) are recorded. The family Noteridae was not reported by Zuellig et al. (2006).

Coleoptera			
Dytiscidae			
Neoporus shermani (Fall)			
	East Range, S. Boundary Road	1	June 14, 2006
Helophoridae			
Helophorus linearis (LeConte)			
	Small Pool, Craig Hill # 1	5	September 18,
Noteridae			
Hydrocanthus atripennis Say			
	East Range, S. Boundary Road	2	June 14, 2006
	Quanah Range, Quanah Creek	2	July 12, 2006
	West Range, Lake Elmer Thomas	3	July 12, 2006

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Zuellig, R. E., B. C. Kondratieff, J. P. Schmidt, R. S. Durfee, D. E. Ruiter, and I. E. Prather. 2006. An annotated list of Aquatic insects of Fort Sill, Oklahoma, excluding Diptera with notes on several new state records. Journal of the Kansas Entomological Society. 79: 34-54.

Appendix G. Additions to the Checklist of the Longhorned Beetles (Coleoptera: Cerambycidae) of Fort Sill, Comanche Co., Oklahoma.

As of 2006, 65 species of longhorned beetles are recorded from Fort Sill, 61% of the known Oklahoma fauna.

Coleoptera

Cerambycidae

Atimia confusa confusa (Say)			
	West Range, West Cache Cr. @ Witchita NWR	1	April 7, 2006
Dectes texanus LeConte			
	East Range, E. Cache Creek, S. Boundary Road	1	June 13, 2006
Lepturges angulatus (LeConte)			
	East Range, E. Cache Creek, S. Boundary Road	2	August 2, 2006
	Quanah Range, Near Twin Gates	1	August 2, 2006
	West Range, Ketch Pond	1	June 12, 2006
Lepturges confluens (Haldeman)			
	East Range, Beef Creek, BLT	1	June 15, 2006
	East Range, E. Cache Creek, S. Boundary Road	1	September 16, 2006
	East Range, Near Geronimo Grave, BLT	2	August 2, 2006
	Quanah Range, Rock Creek	2	June 14, 2006
	West Range, Lake Elmer Thomas	2	September 16, 2006
Neoclytus scutellaris (Olivier)			
	East Range, Natural Resource Building, BLT	1	June 12, 2006
Paralaphidion incertum (Newman)			
	East Range, Natural Resource Building	1	June 14, 2006
Parelaphidion incertum (Newman)			
	East Range, Natural Resource Building	1	August 2, 2006
Urographis despectus (LeConte)			
	East Range, Natural Resource Building, BLT	1	June 14, 2006

Appendix H. Additions to the Scarabaeoidea (Coleoptera) of Fort Sill, Comanche Co., Oklahoma.

As of 2006, 70 species of Scarabaeidae are reported from Fort Sill, representing 27% of the known Oklahoma fauna. *Aphodius pseudolividus* Balthasar, *Ataenius platensis* (Blanchard), *Canthon* (*Melanocanthon*) *nigricornis* (Say), and *Platytomus longulus* (Cartwright) are new state records.

Coleoptera

Scarabaeidae

Anomola binotata	(Gyllenhal)		
West Range, Ketch Pond		13	April 6, 2006
Aphodius pseudolividus	Balthasar		
West Range, Ketch Pond		1	September 17, 2005
Ataenius platensis	(Blanchard)		
East Range, Near Geronimo Grave		1	July 10, 2006
East Range, Near Geronimo Grave		1	August 2, 2006
East Range, S. Boundary Road		2	June 14, 2006
Quanah Range, Quanah Creek		2	July 12, 2006
West Range, Blue Beaver Cr., McKenzie Hill Road		1	July 12, 2006
West Range, Engineer Pond		1	July 12, 2006
Canthon (Melanocanthon) nigricornis	(Say)		
East Range, Natural Resource Building area, Liver bait		1	July 14, 2006
West Range, Near Twin Gates		1	July 12, 2006
Onthophagus pennsylvanicus	Harold		
East Range, Natural Resource Building area, Liver bait		4	July 14, 2006
Onthophagus velutinus	Horn		
Quanah Range, 0.5 mi. E. Falcon Gate		1	July 12, 2006
West Range, Lake Elmer Thomas		1	July 12, 2006
Phyllophaga calceata	(LeConte)		
East Range, Natural Resource Building		2	April 7, 2006
Phyllophaga futilis	(LeConte)		
East Range, Natural Resource Building		1	April 7, 2006
Platytomus longulus	(Cartwright)		
East Range, S. Boundary Road		1	June 14, 2006
West Range, Trib. To Rabbit Creek		1	June 14, 2006
Serica campestris	Dawson		
West Range, Ketch Pond		2	April 6, 2006

Appendix I. Additions to the Silphidae (Coleoptera) of Fort Sill, Comanche Co., Oklahoma.

As of 2006, 6 species of Silphidae or carrion beetles are reported from Fort Sill, representing 40% of the known Oklahoma fauna. *Thanatophilus truncatus* (Say), a species known from Nebraska to Kansas west to Colorado, New Mexico, Arizona, and east to Oklahoma and Texas was observed on July 12, 2006 on a carcass of a raccoon at Natural Resources Building.

Appendix J. Additions to the Asilidae (Diptera) of Fort Sill, Comanche Co., Oklahoma.

As of 2006, 56 species of robber flies or Asilidae are reported from Fort Sill, representing about 43% of the known Oklahoma fauna. *Eccritosia zamon* (Townsend) is a remarkable and beautiful (see photograph below) species previously known from Arizona, California, Texas, and into Mexico and Central America. The Fort Sill specimens represent a new state record for Oklahoma. Individuals of this species were collected perching on the bare sand surrounding East Cache Creek at South Boundary Road ("Pig Farm" area).

Diptera

Asilidae

Eccritosia zamon (Townsend)

Eest Range, East Cache Cr., S. Bound. Rd. 4 July 10, 2006