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SURFACE-ACTIVE ARTHROPODS OF SHORTGRASS PRAIRIE: NEW COUNTY AND STATE RECORDS FROM NEW MEXICO

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Shortgrass prairie of the southern Great Plains extends through much of eastern New Mexico. The area is semi-arid; annual precipitation ranges between 380 and 510 mm (Wright and Bailey, 1982). Little is known about the arthropod fauna in the grasslands of eastern New Mexico, especially about non-economic species, which make up the majority of arthropods. We present here state and county records for surface-active species collected from Union Co. in the northeastern corner of New Mexico. Arthropods were originally collected as part of a fire ecology study (Ford, 2000), which reports on abundance and seasonal patterns.

The study site was on the Kiowa National Grassland (KNG) Ranger District (36°30'N, 103°7'W) of the Cibola National Forest in Union Co., New Mexico. The area consists of ca. 160 ha of shortgrass prairie that has never been plowed though it was grazed by livestock until 1990. Elevation ranges from 1,455 m at the southwest corner to 1,472 m at the northwest corner. Mean annual precipitation is 391 mm. Buffalograss (*Buchloe dactyloides*) and blue grama (*Bouteloua gracilis*) comprise the dominant vegetation species (Ford and McPherson, 1998).

Surface-active arthropods were captured by pitfall traps, which were 1-pint paint cans set into the ground with the opening flush with

the ground surface. Propylene glycol was used as the preservative. Pitfall traps are biased toward capture of solitary wandering species and against those species with low mobility (Uetz and Unzicker, 1976; Baars, 1979; Halsall and Wratten, 1988) or that live in colonies, such as ants (Marsh, 1984). Therefore, this collecting method by itself does not account for all of the site's diversity, even of surface-dwelling species. Two hundred forty pitfalls were placed in a checkerboard pattern across the sites. The traps were open for 2-week periods, once a month, from March to October from 1996 to 1998. Arthropods were collected by PLF and identified by SLB, RAF, and DCL. Voucher specimens have been deposited with the United States Forest Service, Rocky Mountain Research Station in Albuquerque, and with the Division of Arthropods at the Museum of Southwestern Biology, University of New Mexico.

Over the 3 years of the study 251 species in 70 families were collected. Of these, 47 species were county records and 14 were state records (Appendix 1).

Of the 84 species of grasshoppers (Orthoptera: Acrididae and Romaleidae) listed for Union Co. in Richman et al. (1993), we added 2 county records: *Encoptolophus sordidus* and *Syrbula admirabilis*, both from the western edge of their distributional ranges (Otte 1981, 1984).

The single state record for a grasshopper based on records in Richman et al. (1993) was for *Hypochlora alba*, which is widely distributed from Alberta and Manitoba south to Texas (Capinera and Sechrist, 1982; Helfer, 1987), but had yet to be recorded from New Mexico.

We identified only selected taxa from the true bugs (Heteroptera) because pitfall trapping is inappropriate for the many species that rarely leave host plants. The propylene glycol preservative discolored specimens, making identification difficult. However, we report a state record for a species of tingid (lace bug), *Acalypta cooleyi*. The specimen did not completely match the description in Drake and Lattin (1963), but was within the range of variation observed in a series of *A. cooleyi* as reported by Froeschner (1976). The genus is frequently found in mossy sites and may be associated with the abundant cover of cryptogam crusts in this grassland.

Based on records compiled by Fagerlund (2000), there were 22 beetle (Coleoptera) records for Union Co. and 7 for the state. We collected a single specimen of *Microlestes* nr. *nigrinus* from KNG and know of only 1 other unreported specimen collected from the Carson National Forest in Rio Arriba Co. This small harpaline carabid probably represents an undescribed species (G. Ball, pers. comm.). Additional specimens are needed to confirm its status.

The spider (Araneae) species collected from KNG were compared to the regional list compiled by Richman et al. (in litt.; <http://taipan.nmsu.edu/people/richman/southwest.html>). Our collections added 23 county records and 4 state records (Appendix 1). Published locality records showed about half of the species to be widespread in North America and about half common to the western and southwestern states.

Resumen—Además de los saltamontes y otras especies de importancia económica, se sabe muy poco sobre los artrópodos de las praderas en el noreste de Nuevo México. Ofrecemos aquí registros nuevos de especies epigeicas capturadas por trampas de 1996 a 1998. Notamos aquí 14 registros nuevos al nivel del estado y 47 al nivel del condado (3 saltamontes, 29 escarabajos, 1 hemíptero, 27 arañas, y 1 cienpíes.)

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APPENDIX 1—County (*) and state (+) records for surface-active arthropod species collected from Kiowa National Grassland, Union Co., New Mexico, 1996 to 1998.

CLASS CHILOPODA (centipedes)—Order Lithobiomorpha (stone centipedes): Family Lithobiidae: *Lithobius harrietae* Chamberlin+.

CLASS ARACHNIDA—Order Araneae (spiders): Family Lycosidae (wolf spiders): *Pardosa xerophila* Vogel*; *Schizocosa mccooki* (Montgomery)+; *S. mimula* (Gertsch)*; *S. minnesotensis* (Gertsch)*; *Trochosa tericola* Thorell*; *Varacosa gosiuta* (Chamberlin)*. Family Agelenidae (funnel-web spiders): *Agelenopsis longistyla* (Banks)*; *A. spatula* Chamberlin & Ivie*; *Hololena hola* (Chamberlin & Gertsch)*. Family Dictynidae (dictynid spiders): *Dictyna coloradensis* Chamberlin*; *D. personata* Gertsch & Mulaik*; *Emblina cornupeta* (Bishop & Ruderman)*. Family Oxyopidae (lynx spiders): *Oxyopes apollo* Brady*. Family Gnaphosidae (ground spiders): *Drassodes gosiutus*

Chamberlin*; *Drassyllus dromeus* Chamberlin*; *D. inanus* Chamberlin & Gertsch+; *D. lamprus* (Chamberlin)*; *D. lepidus* (Banks)*; *D. nannellus* Chamberlin & Gertsch+; *Gnaphosa clara* (Keyserling)*; *G. sericata* (L. Koch)*; *Nodocion rufithoracicus* Worley*; *Zelotes gertschi* (Platnick & Shadab)+. Family Thomisidae (crab spiders): *Xysticus aprilius* Bryant*; *X. gulosus* Keyserling*; *X. lassanus* Chamberlin*; *X. parvulus* Gertsch*.

CLASS INSECTA (insects)—Order Orthoptera (grasshoppers, crickets and relatives): Family Acrididae (grasshoppers): *Encoptolophus sordidus* (Burmeister)*; *Hypochlora alba* Dodge+; *Syrbula admirabilis* (Uhler)*. Order Heteroptera (true bugs): Family Tingidae (lace bugs): *Acalypta cooleyi* Drake+. Order Coleoptera (beetles): Family Carabidae (ground beetles): *Amara ellipsis* (Casey)*; *A. near idahoana* (Casey)*; *Amblycheila cylindriformis* (Say)*; *Clivina impressifrons* LeConte+; *Colliurus pennsylvanicus* (Linnaeus)+; *Dyschirius globulosus* (Say)*; *Geopinus incrasatus* (Dejean)*; *Harpalus pennsylvanicus* (De Geer)*; *Microlestes* near *nigrinus* (Mannerheim)+. Family Scarabaeidae (scarab beetles): *Diplotaxis thoracicus* Fall*; *Euphoria histrionica* Thomson*; *Ligyris gibbosus* (De Geer)*; *Paracotalpus puncticollis* (LeConte)*. Family Cantharidae (soldier beetles): *Chauliognathus pennsylvanicus* (De Geer)+. Family Nitidulidae (sap beetles): *Carpophilus lugubris* Murray*. Family Coccinellidae (ladybird beetles): *Hyperaspis vittigerus* (LeConte)*; *Hyperaspis punctata* LeConte+. Family Mordellidae (tumbling flower beetles): *Mordella atrata* Melsheimer*. Family Tenebrionidae (darkling beetles): *Asidopsis polita* (Say)*; *Eleodes fusiformis* LeConte*; *Eusattus convexus* LeConte*; *Glyptasida sordida* (LeConte)*; *Lobometapon fusiformis* (Casey)*. Family Meloidae (blister beetles): *Epicauta ingrata* Fall*; *E. pardalis* LeConte*. Family Anthicidae (ant-like flower beetles): *Anthicus formicarius* (Goeze)*; *A. plectrinus* Casey+; *Baulius tenuis* LeConte*. Family Cerambycidae (long-horn beetles): *Typocerus octonotatus* (Haldeman)+.

HARVESTER ANTS (*POGONOMYRMEX OCCIDENTALIS*) AND POCKET GOPHER (*THOMOMYS TALPOIDES*) MOUNDS ON A SHORTGRASS STEPPE IN COLORADO

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Numerous studies have investigated effects of pocket gophers (Geomyidae) on soil, nutrients, and vegetation (McDonough, 1974; Laylock and Richardson, 1975; Andersen and

MacMahon, 1981; Hobbs and Mooney, 1985; Reichman and Smith, 1985; Williams and Cameron, 1986; Andersen, 1987; Inouye et al., 1987a, 1987b; Koide et al., 1987; Huntly and