Pryor Mountains

- BioBlitz 2012 -

Pryor Mountain BioBlitz Report. Written and Compiled by Kayhan Ostovar, Rocky Mountain College, Billings, MT 59102.

Introduction - What is a BioBlitz?

A BioBlitz is designed as part contest, part festival, part educational event, and an important scientific endeavor. During a BioBlitz a catalog is made of the total biodiversity via a species list, such as, all the bat species found or all of the invertebrates found. Knowing the number and diversity of species in a given area helps us understand the ecosystems that sustain the clean water, air, and healthy soils that we all enjoy.

In addition to increasing our scientific knowledge of the biological diversity in a specific area, a BioBlitz helps generate public awareness about the importance of biodiversity and conservation issues. A BioBlitz is also a tremendous asset to land managers who receive real, scientific, site-specific data about the land. Preeminent biologist and Harvard professor E.O. Wilson co-sponsored the first BioBlitz event to catalog organisms around Walden Pond in the mid-1990s.

The first BioBlitz in Montana was held along the Yellowstone River in Billings in 2007 (Ostovar 2007). In 2009 Yellowstone Park worked with Rocky Mountain College (RMC) to organize their first BioBlitz, which received considerable media attention (Ostovar 2009). The Yellowstone project documented over 1079 species in just 24 hours with 120 participating scientists and volunteers. In 2011, RMC worked with the American Prairie Reserve in north-central Montana, adjacent to the Charles M. Russell National Wildlife Refuge to conduct a prairie BioBlitz (Ostovar 2011). At least 60 scientists converged on the vast prairie landscape for a successful event which documented 542 species.

A key element of a BioBlitz is public participation or more specifically the use of citizen scientists. For a successful BioBlitz organizers try to recruit three types of volunteers 1) taxonomic experts, 2) citizen scientists, 3) general volunteers who just want to take part and help out. Citizen scientists are those people in the community with a special interest in natural history. These people are very important as much of the survey and collecting work requires more eyes and hands in the field.

Figure 1. Volunteers gather at base camp the evening before the BioBlitz.

Often citizen scientists are teamed up with taxonomic experts to help them carry out their sampling work. Other times these citizen scientists may be tasked with performing their own survey work for specimens that we will send off to regional experts for proper identification (Figure 1).

Why the Pryor Mountains?

The Pryor Mountains are a unique landscape that provides an ecological island amidst an otherwise dry prairie landscape. Quite different from the glacially influenced granitic Beartooth Mountains, 40 miles to the west, the Pryors are the result of eroding uplifted limestone. Rugged limestone canyons have formed on the west and south slopes from elevations starting at 8,800 ft. Probably the most spectacular of these canyons is Crooked Creek, which has been designated a wild and scenic river (www.PryorsCoalition.org). (Figure 2)

Figure 2. Pryor Mountains viewed from the east.

The Pryor Mountains habitat diversity is composed of sagebrush, riparian cottonwood, mountain mahogany, limber pine, juniper (up to 500 years old) and other communities. The Pryor Mountains contain proposed Wilderness Areas, a Wild and Scenic River, Wilderness Study Areas, and Important Plant and Areas. Nearly 1000 species of plants have been identified, including some rare and sensitive species, such as, Shoshone carrot (*Shoshonea pulvinata*), and Pryor Mountain bladderpod (*Lesquerella lesicii*) first discovered in 1991 and found only in the Pryor Mountains (Figure 3). In recognition of the unique landscape and species diversity, parts of the Pryor Mountains have also been designated an Important Bird Area because of the unique bird species that are found nowhere else in Montana (Figure 4).

Figure 3. Pryor Mountain bladderpod.

Photo Peter Lesica

Figure 4. Blue-gray gnatcatcher.

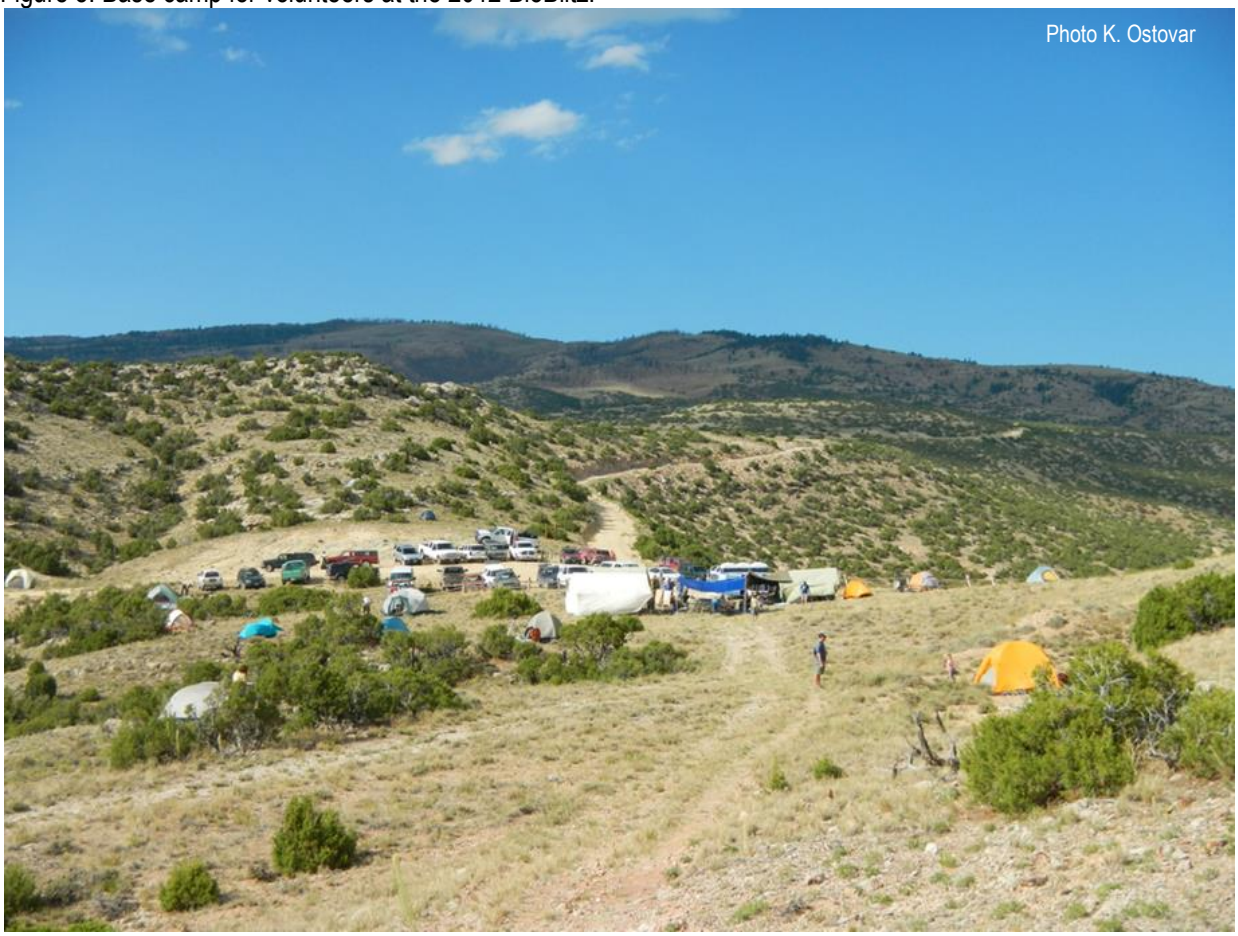
Photo Radd Icenoggle

Support

The idea for a BioBlitz in the Pryor Mountains was carried forward by Dick Walton and Cal Cumin. They worked with RMC professor Kayhan Ostovar to gather support, raise funds and organize the logistics for the project. Primary funding and logistical support came from the Bureau of Land Management, the United States Forest Service – Custer District and the Montana Wilderness Association – Eastern Wildlands Chapter. Additional funds were raised from individual donations by members of the Pryors Coalition. The survey area base camp had to be a location where port-a-potties and water could be delivered as well as a site that the food services trailer could access (Figure 5).

Approximately 80 volunteers worked on survey teams a minimum of 20 hours during the BioBlitz and contributed a total of ($22,920.00) in volunteer hours (based on the current Montana volunteer rate of $15.28. Additional mileage by the volunteer survey teams equaled approximately ($3,300.00) based on the government rate of .55c per mile. Clearly, this amount of volunteer contributions is a huge asset to land managers operating under restricted budgets.

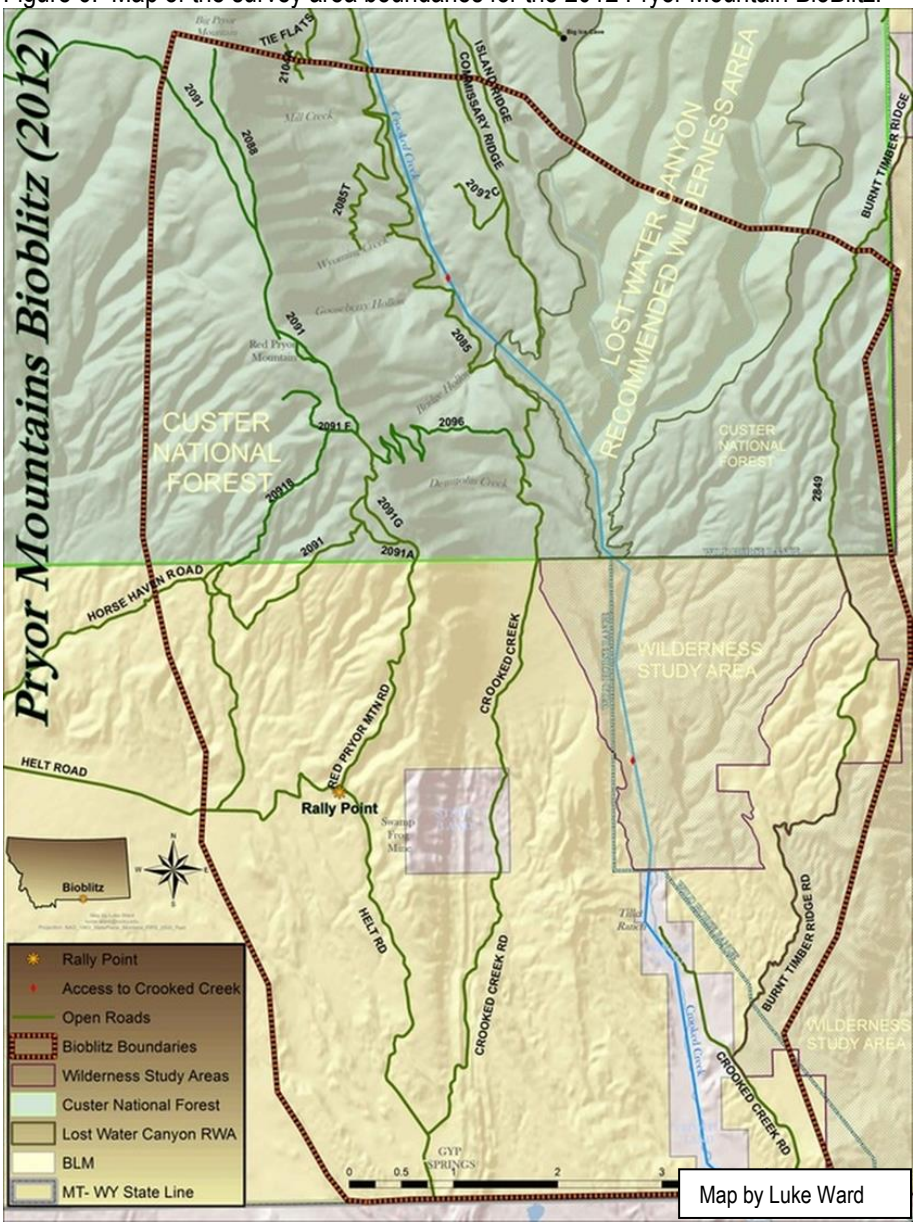
Figure 5. Base camp for volunteers at the 2012 BioBlitz.



Study Area

In a 24-hour sampling window it would be impossible to survey the whole Pryor Mountain ecosystem due to the size and logistical challenges of the rugged landscape. To optimize the diversity of the area surveyed and best utilize limited time we selected an area in the Pryor Mountains that allowed access to the subalpine habitat, Crooked Creek drainage and lower elevation habitats. The central base camp for volunteers is located at the yellow star below labeled rally point. (Figure 6)

Figure 6. Map of the survey area boundaries for the 2012 Pryor Mountain BioBlitz.



Results - The taxonomic groups were as follows: Botanical, Invertebrates {Diptera, Orthoptera, Hymenoptera (bees, wasps, ants, parasitic wasps), Lepidoptera, Odonata, Annelid Worms, Arachnids, Crustaceans, and Terrestrial Mollusks}, Birds, Terrestrial Mammals, Bats, Herpetofauna and Fish.

Invertebrate team sorting through specimens in a sweep net.

Botanical - 336 species

The Montana Native Plant Society has named the south slopes of East Pryor and Big Pryor as the South Pryor Mountains Important Plant Area. There are twenty plant species of concern. The Pryor Mountains are noted for many diverse plant communities as one ascends in elevation from the Bighorn Basin to the subalpine forests and meadows. The Botany team had one of the largest groups of volunteers and was led by Jennifer Lyman and Clayton McCracken.

The team was alarmed at what seems to an explosion of weeds in the Pryor Mountains. Of a total of 336 species of plants identified by the team, 56 families were represented and 23 species or (~ 7%) were non-native weeds. Of great concern were the weeds along the roadside of the recently reconstructed Forest Service portion of the Crooked Creek Road. Several non-native mustard species are densely growing on stretches of the road banks that were exposed during construction. There are several large patches of Canada thistle along the road spreading out into the meadows. This thistle, spreading by rhizomes grows in very dense patches. Hounds tongue is scattered up and down the road. After these were reported, the Forest Service did a very thorough job of spraying both the thistle and the hounds tongue.

Cheat grass has taken over the shoulder of Red Pryor since the 2002 Red Waffle Fire. Spotted knapweed was found in one location on the Horse Haven-Red Pryor road and around the Mine Hill on BLM land and upper elevation of Cheyenne Flat on Forest Service land. This was reported to the respective agencies and the knapweed has since been sprayed. A small dense patch of leafy spurge was found in Cheyenne Flat on the roadside by a large mud hole. The seeds were undoubtedly washed off some vehicle. The patch was dug up but will have to be monitored and sprayed next summer. Leafy Spurge will re-sprout from roots left in the ground.

For a long time there has been halogeton at the South East entrance of the Horse Range and for about three miles up the road. There is no plan to treat this very persistent weed. In 2010 BLM cut down and treated the Russian olive and Tamarisk around Cottonwood Spring. The spring was visited and the treatment was noted to be holding well.

As a result of the BioBlitz there is a small group that is now starting to explore with the two federal agencies how citizen scientists and organizations in the Pryors Coalition might work with the agencies toward controlling weeds in the Pryor Mountains.

Plant List – Compiled by Jennifer Lyman
Taxonomy per Manual of Montana Vascular Plants by Lesica

Agavaceae		**Asteraceae**	
	Yucca glauca		*Arnica cordifolia*
Amaranthaceae			*Arnica fulgens*
	Amaranthus retroflexus		*Arnica mollis*
	Atriplex x aptera		*Artemisia arbuscula*
	Atriplex canescens		*Artemisia campestris var scouleriana*
	Atriplex confertifolia		*Artemisia dracunculus*
	Atriplex gardneri		*Artemisia frigida*
	Chenopodium album		*Artemisia ludoviciana var. ludoviciana*
	Chenopodium capitatum		*Artemisia nova*
	Chenopodium fremontii		*Artemisia pedatifida*
	Chenopium watsonii		*Artemisia spinescens*
	Halogeton glomerata		*Artemisia tridentata var. tridentata*
	Krascheninnikovia lanata		*Artemisis tridentata var. ludoviciana*
	Salsoli collina		*Artemisia tridentata var. wyomingensis*
	Sarcobatus vermiculatus		*Balsamorhiza incana*
Anacardiaceae			*Balsamorhiza sagittata*
	Rhus trilobata var. trilobata		*Chaenactis douglasii*
Apiaceae			*Chrysothamnus viscidiflorus*
	Bupleurum americanum		*Cirsium arvense*
	Heracleum lanatum		*Cirsium hookerianum*
	Lomatium cous		*Cirsium undulatum*
	Lomatium dissectum		*Crepis acuminata*
	Lomatium foeniculaceum		*Ericameria nauseosa var. graveolens*
	Musineon vaginatum		*Erigeron allocotus*
	Shoshonea pulvinata		*Erigeron caespitosus*
Apocynaceae			*Erigeron compositus*
	Asclepias speciosa		*Erigeron corymbosus*
Asteraceae			*Erigeron divergens*
	Achillea millefolium		*Erigeron gracilis*
	Agoseris glauca var. dasycephala		*Erigeron ochroleucus*
	Agoseris parviflora		*Eriophyllum lanatum*
	Anaphalis margaritacea		*Eurybia glauca*
	Antennaria anaphaloides		*Filago arvensis*
	Antennaria microphylla		*Gaillardia aristata*
	Antennaria racemosa		*Grindelia squarrosa*
	Antennaria rosea		*Gutierrezia sarothrae*

Asteraceae		**Boraginaceae**	*Lappula myosotis*
	Helianthella quinquenervis		*Lithospermum ruderale*
	Hymenopappus filifolius var. polycephalus		*Mertensia ciliata*
	Iva axillaris		*Mertensia oblongifolia*
	Lactuca oblongifolia		*Myosotis alpestris*
	Lactuca serriola	**Brassicaceae**	
	Lygodesmia juncea		*Alyssum alyssoides*
	Matricaria discoidea		*Alyssum desertoides*
	Matricaria matricarioides		*Arabis nuttallii*
	Oristemma alpigenum		*Camelina microcarpa*
	Packera cana		*Capsella bursa-pastoris*
	Packera streptanthifolia		*Chorispora tenella*
	Pyrrocoma uniflora		*Descurainia pinnata var. intermedia*
	Senecio eremophilus		*Descurainia sophia*
	Senecio fremontii		*Draba oligosperma*
	Senecio integerrimus var. exaltatus		*Erysimum inconspicuum*
	Solidago canadensis		*Lesquerella alpina*
	Solidago missouriensis		*Malcolmia africana*
	Sphaeromeria capitata		*Sinapis arvensis*
	Stenotus acaulis		*Sisymbrium altissimum*
	Stephanomeria runcinata		*Sisymbrium loeselii*
	Symphyotricum laeve var. geyeri		*Stanleya pinnata*
	Taraxacum officinale		*Stanleya tomentosa*
	Tetradymia canescens		*Thlaspi arvense*
	Tetraneuris acaulis var. acaulis		*Turritis glabra*
	Townsendia parryi	**Cactaceae**	
	Townsendia spathulata		*Opuntia polyacantha*
	Tragopogon dubius		*Opuntia fragilis*
	Xanthisma grindelioides var. grindelioides	**Campanulaceae**	
Berberidaceae			*Campanula rotundifolia*
	Berberis repens	**Caprifoliaceae**	
Boraginaceae			*Lonicera utahensis*
	Cryptantha celosioides		*Symphoricarpos albus var. laevigatus*
	Cryptantha spiculifera		*Symphoricarpos occidentalis*
	Cynoglossum officinale		*Symphoricarpos oreophilus var. utahensis*
	Eritrichium howardii		*Valeriana edulis var. edulis*

Caprifoliaceae		**Equisetaceae**	
	Valeriana occidentalis		*Equisetum arvense*
Caryophyllaceae			*Equisetum laevigatum*
	Arenaria congesta var. congesta	**Ericaceae**	
	Arenaria hookeri		*Arctostaphylos uva-ursi*
	Cerasium arvense		*Vaccinium membranaceum*
	Minuartia nutalli		*Vaccinium scoparium*
	Minuartia obtusiloba	**Fabaceae**	
	Moehringia lateriflora		*Astragalus adsurgens var. robustior*
	Paronychia sessiflora		*Astragalus drummondii*
	Silene drummondii var. stricta		*Astsragalus grayii*
	Silene menziesii		*Astragalus miser var. decumbens*
Convolvulaceae			*Astragalus miser var. miser*
	Convolvulus arvensis		*Astragalus spathulatus*
Cornaceae			*Astragalus vexilliflexus*
	Cornus sericea var. sericea		*Glycyrrhiza lepidota*
Crassulaceae			*Hedysarum boreale var boreale*
	Sedum lanceolatum		*Hedysarum sulphurescens*
Cupressaceae			*Lupinus argenteus var. argenteus*
	Juniperus communis var. depressa		*Lupinus sericea*
	Juniperus horizontalis		*Medicago lupulina*
	Juniperus osteosperma		*Medicago sativa*
	Juniperus scopulorum		*Melilotus officinale*
Cyperaceae			*Oxytropis campestris*
	Carex atherostachya		Oxytropis lagopus var. lagopus
	Carex filifolia		Oxytropis sericea var. sericea
	Carex hoodii		Trifolium pratense
	Carex scirpoidea var. pseudoscirpoidea		Trifolium repens
	Eleocharis tenuis		Vicia americana
Dryopteridaceae		**Fumariaceae**	
	Cystopteris fragilis		Corydalis aurea
Elaeagnaceae		**Gentianaceae**	
	Shepherdia canadensis		Frasera speciosa
			Gentiana affinis

Geraniaceae		**Onagraceae**	*Chamerion angustifolius var. canescens*
	Geranium richardsonii		*Epilobium ciliatum var. ciliatum*
	Geranium viscosissimum var. viscosissimum		*Gaura coccinea*
Grossulariaceae			*Oenothera cespitosa var. cespitosa*
	Ribes cereum	**Orchidaceae**	
	Ribes lacustre		*Corallorhiza maculata*
	Ribes montigenum	**Orobanchaceae**	
	Ribes oxyacanthoides var. setosum		*Castillija angustifolia var. dubia*
Iridaceae			*Castilleja lineata*
	Iris missouriensis		*Castilleja miniata*
Juncaceae			*Castilleja pilosa var. longispica*
	Juncus balticus		*Castilleja pulchella*
	Juncus confusus		*Castilleja sessiliflora*
	Juncus hallii		*Castilleja sulphurea*
	Juncus mertansianus		*Orobanche fasciculata*
	Juncus tenuis		*Orobanche uniflora*
Lamiaceae			*Orthocarpus luteus*
	Hedeoma drummondii	**Phrymaceae**	
	Mentha arvensis		*Mimulus guttatus*
Liliaceae		**Pinaceae**	
	Allium brevistylum		*Abies bifolia*
	Allium cernuum		*Picea engelmannii*
	Allium textile		*Pinus flexilis*
	Calochortus nuttallii		*Pseudotsuga menziesii var. glauca*
	Prosartes trachycarpa	**Plantaginaceae**	
	Smilacina racemosa		*Besseya wyomingensis*
	Zigadenus elegans		*Collinsia parviflora*
	Zigadenus venenosus		*Pedicularis cystopteridifolius*
Linaceae			*Penstemon aridus*
	Linum lewisii		*Penstemon attenuatus var. pseudoprocerus*
Malvaceae			*Penstemon caryi*
	Sphaeralcea coccinea		*Penstemon laricifolius var laricifolius*
Onagraceae			*Penstemon nitidus*
	Chamerion angustifolium var. angustifolium		*Penstemon procerus*

Plantaginaceae		**Poaceae**	*Poa secunda ssp. secunda*
	Plantago patagonica		*Poa wheeleri?*
	Veronica americana		*Polypogon monspeliensis*
	Veronica biloba		*Vulpia octoflora var. hirtella*
Poaceae		**Polemoniaceae**	
	Achnatherum hymenoides		*Ipomopsis spicata var. cephaloidea*
	Achnatherum nelsonii ssp. dorei		*Ipomopsis spicata var. spicata*
	Achnatherum nelsonii ssp. Nelsonii		*Microsteris gracilis var. gracilis*
	Agropyron cristatum var. cristatum		*Phlox hoodii*
	Alopecuris arundinacea		*Phlox multiflora*
	Aristida purpurea var. fendleriana		*Phox muscoides*
	Bouteloua gracilis	**Polygonaceae**	
	Bromis inermis		*Bistorta bistortoides*
	Bromis japonicus		*Eriogonum brevicaule var. canum*
	Bromus tectorum		*Eriogonum flavum var. flavum*
	Elymus cinereus		*Eriogonum mancum*
	Elymoides elymoides var. brevifolius		*Eriogonum ovalifolium var. purpureum*
	Elymoides elymoides var. elymoides		*Eriogonum umbellatum var. umbellatum*
	Elymus glaucus var. glaucus		*Polygonum aviculare*
	Elymus spicatus	**Portulaceae**	
	Elymus trachycaulus ssp. subsecundus		*Lewisia redivia var. rediviva*
	Elymus trachycaulus ssp. trachycaulus		*Claytonia lanceolata*
	Festuca idahoensis	**Primulaceae**	
	Hesperostipa comata var. comata		*Androsace septentrionalis*
	Hordum jubatum ssp. jubatum		*Dodecatheon conjugens var. conjugens*
	Koeleria macrantha		Douglasia montana
	Leucopoa kingii	**Pteridaceae**	
	Melica bulbosa		Cheilanthes feei
	Oryzopsis hymneniodes		Pellaea breweri
	Phleum pratense		Pellaea glabella
	Poa alpina	**Ranunculaceae**	
	Poa ampla		Actaea rubra
	Poa interior		Anemone multifida var. multifida

Ranunculaceae		**Salicaceae**	
	Anemone patens var. multifida		*Populus angustifolia*
	Clematis hirsutissima		*Populus acuminata*
	Clematis occidentalis var. grosseserrata		*Populus tremuloides*
	Delphinium bicolor ssp. bicolor		*Salix bebbiana*
	Ranunculus glaberrimus var. ellipticus	**Salicaceae**	
	Thalictrum dasycarpum		*Salix brachiocarpa*
Rhamnaceae			*Salix exigua ssp. interior*
	Ceanothus velutinus var. velutinus	**Santalaceae**	
Rosaceae			*Comandra umbellata*
	Dasiphora fruticosa	**Sapindaceae**	
	Fragaria virginiana		*Acer glabrum var. glabrum*
	Geum aleppicum	**Saxifraceae**	
	Geum macrophyllum var. perincisum		*Heuchera parvifolia*
	Geum triflorum var. triflorum		*Lithophragma parviflorum*
	Ivesia gordonii		*Saxifraga rhomboidea*
	Petrophyton caespitosum	**Selaginellaceae**	
	Potentilla gracilis		*Selaginella densa*
	Potentilla hippiana var. effuse	**Tamaricaceae**	
	Potentilla ovina var. ovina		*Tamarix ramosissima*
	Prunus virginiana var. melanocarpa	**Verbenaceae**	
	Rosa woodsii var. ultramontane	**Violaceae**	
	Rubus idaeus var. aculeatissimus		*Viola canadensis*
	Rubus parviflorus var. parviflorus		*Viola praemorsa*
	Spiraea betulifolia var. lucida		
Rubiaceae			
	Galium aparine		
	Galium boreale		

Orthoptera – Grasshoppers, katydids and crickets - 25 species

Ralph Scott was the taxonomic team leader helped by, Donna Scott, Wano Urbanos, Ross & Virginia Waples, Mike Schilz, Cameron Sapp, Alejandro Garcia, Casey Delphia, Carolyn Sevier, and Dick Walton

Orthoptera Diversity: A total of 25 Orthoptera species were collected, broken down into the following taxonomic groups: Slantfaced Grasshoppers, *Gomphocerinae* eight species, Bandwinged Grasshoppers, *Oedipodinae* seven species, Spurthroated Grasshoppers, *Cyrtacanthacridinae & Melanoplinae* six species, Katydids & Crickets, *Tettigonioidae & Grylloidea* two species, Camel Crickets & Jerusalem Cricket, *Gryllacridoidea* two species (Figure 6, 7, 8, 9).

Figure 6. Slantfaced grasshoppers.

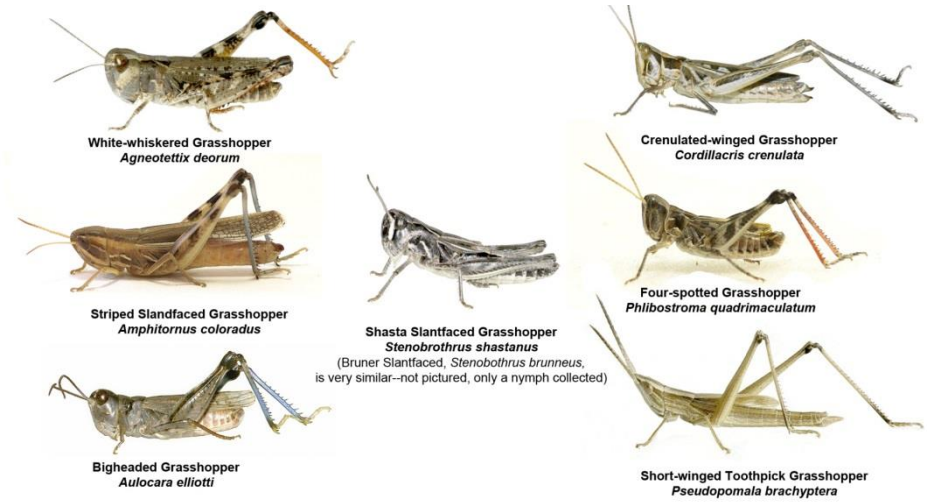


Figure 7. Bandwinged grasshoppers.

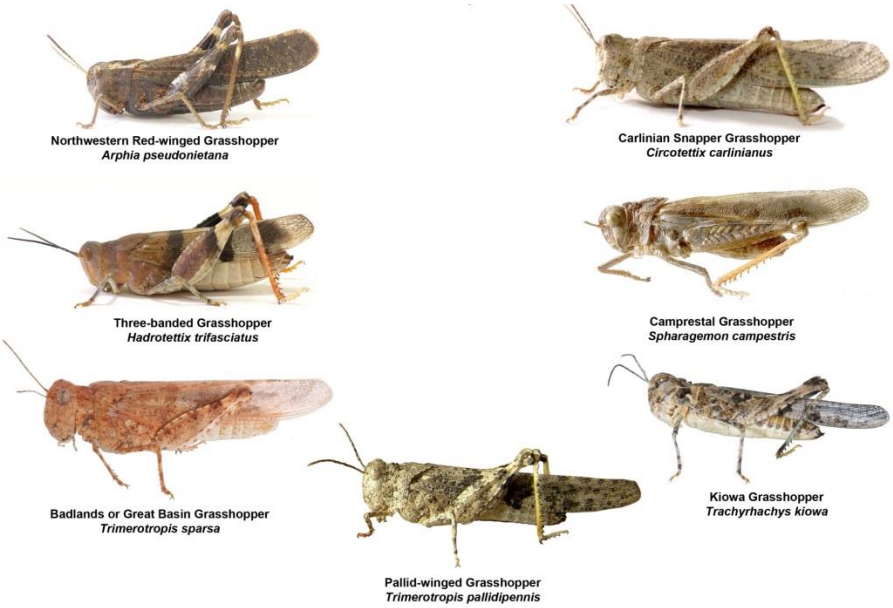


Figure 8. Spurthroated grasshoppers.

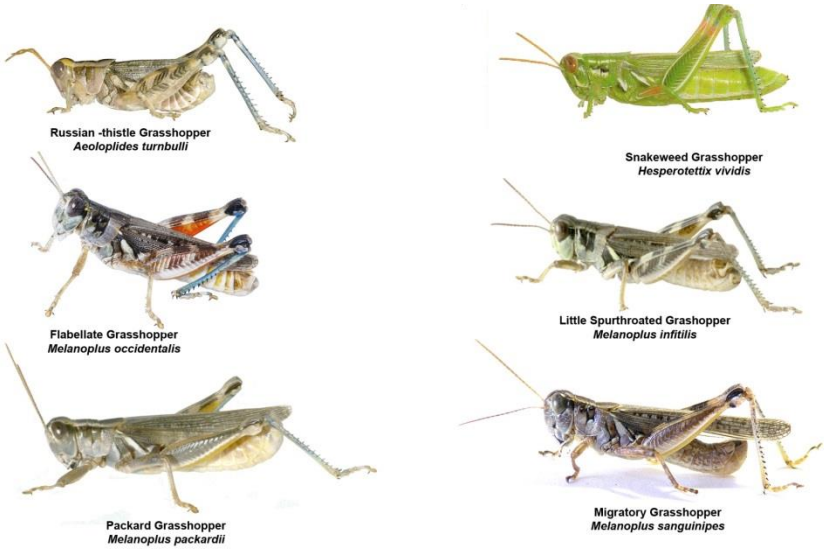
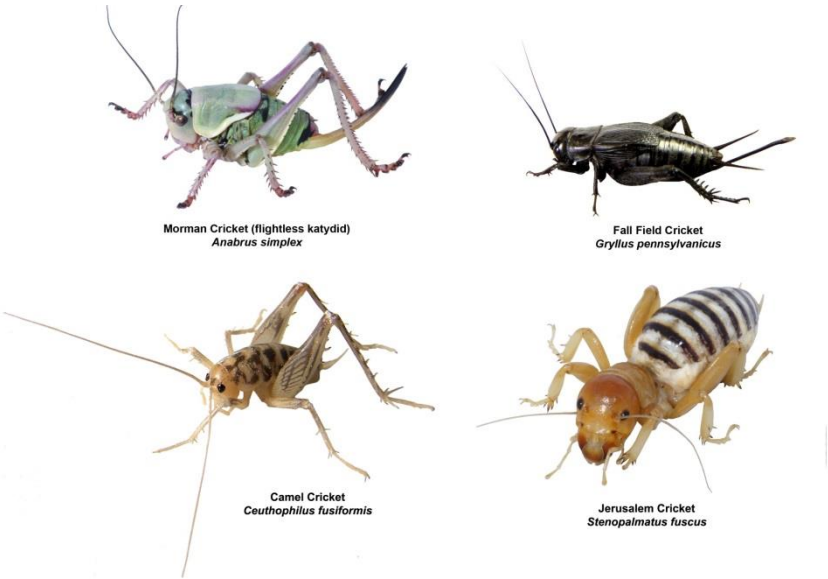


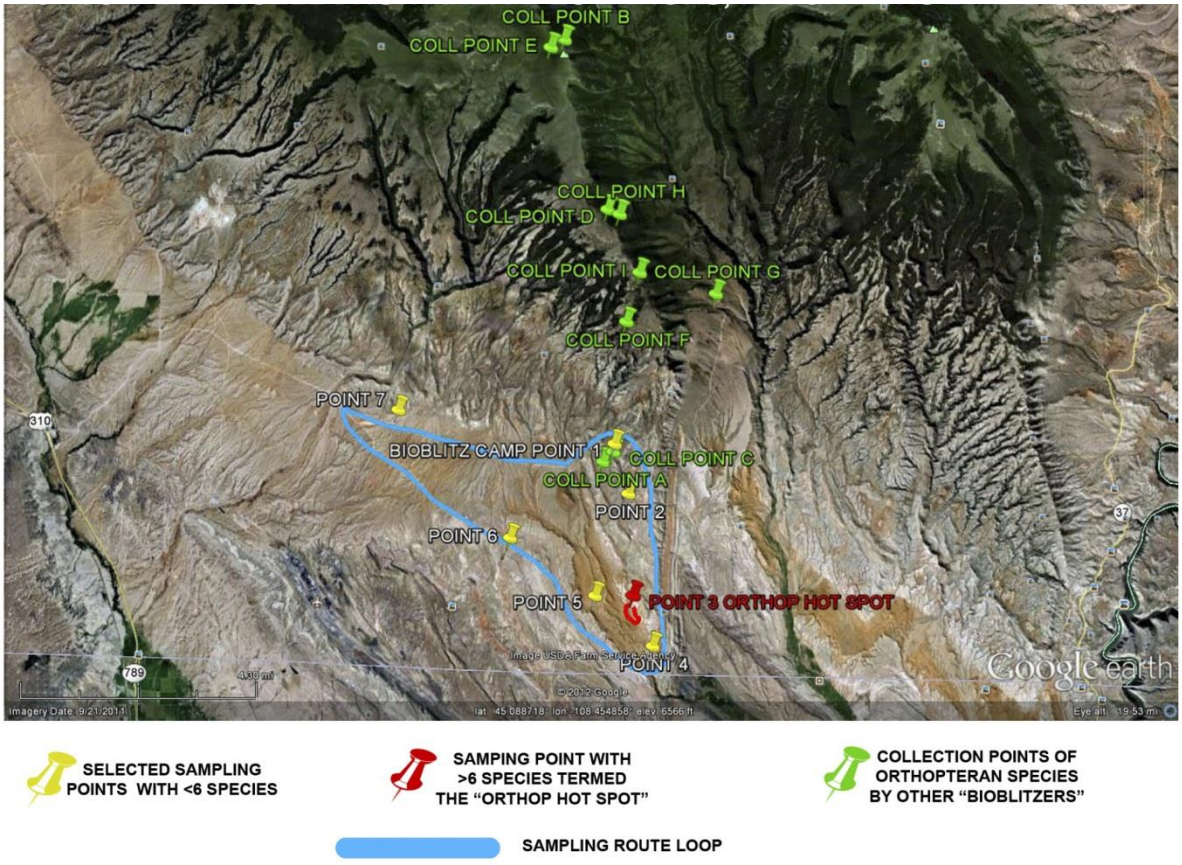
Figure 9. Katydids, crickets and allies.



Map & Sampling/Collection Points: The primary area and route for Orthoptera sampling is outlined in blue along roads. Sampling Points are marked in yellow and numbered, with the exception of point 3 which is marked in red and termed "orthop hot spot" due to the site's great diversity and abundance of grasshoppers. The other yellow sample points had less than 6 species and very low density. There were also no species observed at these points that were not collected at point 3. Other Collecting Points are marked in green and lettered. These are sites where specimens were collected by other BioBlitzers sampling other subjects (Figure 10).

Special Notes: A total of 11 species (noted by a red dot on the data sheets) are probably new occurrence records for Carbon County, MT. Plus, a relatively rare, arid land species (at point 3), (*Trimerotropis sparsa),* Great Basin or Badlands Grasshopper, which has only been previously recorded in six Montana counties. In 12 years of working with Orthopterans in Montana, this is the first time Ralph Scott observed and collected this species—an exciting find!

Figure 10. Orthoptera collection area and locations.



Lepidoptera – Butterflies – 33 species

Orty Bourquin was the taxonomic team leader with help from Cal Cumin, Dick Walton and Virginia and Ross Waples. Species confirmations were provided by Lepidopterist Steve Kohler for which he is gratefully acknowledged. A total of 33 species were recorded.

Family: Papilionidae Parnassians and Swallowtails

Rocky Mountain parnassian *Parnassius sminthius* Bourquin:N45.08572, W108.43245, Well vegetated, moderate slope in burnt-over area, formerly a Douglas fir stand. Nectaring on yellow-flowered composite. N45.09708, W108.44093 on edge of open pond. N45.09708, W108.44093 open herbaceous/grassy area near edge Douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium* sp., stonecrop *Sedum s*p. Nectaring on *Sedum* sp. and on yarrow *Achillea millefolium.* Walton: N45.10236, W108.43975, Red Pryor Mountain top. (Figure 11).

Figure 11. Rocky Mountain parnassian (Bourquin)

Two-tailed swallowtail *Papilio multicaudatus* Bourquin : Two miles north of N45.18147, W108.43649. On road cutting through douglas fir forest, nectaring on thistle on bank. Walton: N45.12700, W108.43068, Wyoming Creek, N45.11801, W10845384, Red Pryor Mountain top (Figure 12).

Figure 12. Two-tailed swallowtail (Bourquin).

Pale Swallowtail *Papilio eurymedon* Walton: N45.12700, W108.43068, Wyoming Creek; Waples: N45.16183, W108.46790 Subalpine meadow outside the mouth of Crater Cave (Figure 13).

Figure 13. Pale swallowtail (Waples), pale swallowtail (Walton).

Family Pieridae Whites and Sulphurs
Becker's white *Pontia beckeri* Walton: N45.09769, W108.41106, Crooked Creek Road (Figure 14).

Figure 14. Becker's white (Walton).


Western white *Pontia occidentalis* Bourquin: N45.05780, W 108.44665 Open, dry patch of grass and sage in drainage line west of camp, in general juniper/sage community (Figure 15).

Figure 15. Checkered white (Bourquin).


Cabbage white *Pieris rapae* July 8. Bourquin: N45.12700, W108.43055. In vegetation on edge of small stream. Good grass and herbaceous cover (Figure 16).

Figure 16. Cabbage white (Bourquin).

Clouded sulphur *Colias philodice* Bourquin*:* N45.08572, W108.43245 Well vegetated, moderate slope in burnt-over area, formerly douglas fir stand; Bourquin: N45.09708, W108.44093 edge of large open area bordering douglas fir forest; Walton: N45.12700, W108.43068 Wyoming Creek (Figure 17).

Figure 17. Clouded sulphur (Bourquin) & Clouded sulphur (Walton).


Christina's sulphur *Colias chistina* Walton: N45.11570, W108.44768, Red Pryor Mountain road (Figure 18).

Figure 18. Christina's sulphur (Walton)

Family: Lycaenidae Coppers, Hairstreaks and Blues
Dorcas copper *Lycaena florus?* Bourquin: N45.08572, W108.43245 well vegetated, moderate slope in burnt-over area, formerly a douglas fir stand. Nectaring on yarrow, and resting on dead grass on ground (Figure 19).

Figure 19. Dorcas copper (Bourquin).

Sagebrush sooty hairstreak *Satyrium semiluna* Bourquin: N45.08572, W108.43245 Well vegetated, moderate slope in burnt-over area, formerly a Douglas fir stand. Nectaring on pearly everlasting *Anaphalis margaritacea* (Figure 20).

Figure 20. Sagebrush sooty hairstreak (Bourquin).

Juniper hairstreak *Callophrys gryneus siva* Bourquin: N45.05725, W108.44656 Nectaring on rabbit brush *Chrysothamnus nauseosus*, in open juniper community (Figure 21).

Figure 21. Juniper hairstreak siva (Bourquin).

Gray hairstreak *Strymon melinus* Bourquin : N45.05725, W108.44656 Nectaring on rabbit brush *Chrysothamnus nauseosus*, in open juniper community, and N45.08572, W108.43245 - well vegetated, moderate slope in burnt-over area, formerly a douglas fir stand. Nectaring on pearly everlasting *Anaphalis margaritacea* (Figure 22).

Figure 22. Gray hairstreak (Bourquin).

Boisduval's blue *Icaricia icarioides* Bourquin *:* N45.09708 W108.44093 Open herbaceous/grassy area near edge douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium* sp., stonecrop *Sedum* sp., N45.09708, W108.44093 on mud, edge of open pond, Walton: N45.12700, W108.43068, Gooseberry Hollow (Figure 23).

Figure 23. Boisduval's blue (Bourquin), Boisduval's blue (Walton).

Melissa blue *Lycaeides melissa* Bourquin: N45.09708, W108.44093 On mud, edge of open pond and nectaring on yarrow *Achillea millefolium*; N45.08572, W108.43245 - well vegetated, moderate slope in burnt-over area, formerly a douglas fir stand. Nectaring on blue-rayed composite; N45.09708, W108.44093, open herbaceous/grassy area near edge douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium sp*., stonecrop *Sedum s*p. Nectaring on *Sedum* sp. and on unidentified white flower. Walton: N45.11570, W108.44768. Red Pryor Mountain road, N45.11801, W10845384. Red Pryor Mountain Rd.(Figure 24).

Figure 24. Melissa blue (Bourquin)

Shasta blue *Icarica shasta* Bourquin: N45.08572, W108.43245 above well vegetated, moderate slope in burnt-over area, formerly a douglas fir stand, on road edge in sage community. Nectaring on yellow sweet clover *Melilotus officinalis* (Figure 25).

Figure 25. Shasta blue (Bourquin).

Family: Nymphalidae Brushfoots
Variegated fritillary *Euptoieta claudia* *W*alton: N45.11501, W108.41902. Crooked Creek Road (Figure 26).

Figure 26. Variegated fritillary.

Zerene fritillary *Speyeria* sp. *(zerene)?* Walton*:* N45.12700, W108.43068, Wyoming Creek (Figure 27).

Figure 27. Zerene? fritillary (Walton).

Mormon fritillary *Speyeria mormonia* Bourquin: N45.10235, W108.43970 on mud edge of open pond and nectaring on thistle near pond. N45.09708, W108.44093 open herbaceous/grassy area near edge douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium* sp., stonecrop *Sedum* sp. Nectaring on blanket flower; Walton: N45.11570, W108.44768, Red Pryor Mountain road (Figure 28).

Figure 28. Mormon fritillary (Bourquin).

Great basin fritillary *Speyeria egleis* Bourquin:N45.10235, W108.43970 on mud, edge of pond (Figure 29).

Figure 29. Great basin fritillary (Bourquin).

Hydaspe fritillary *Speyeria hydaspe* Bourquin:N45.10235, W108.43970 on mud, edge of pond (Figure 30)

Figure 30. Hydaspe fritillary (Bourquin).

Northern checkerspot *Chlosyne palla* Bourquin: N45.09708, W108.44093, open herbaceous/grassy area near edge douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium* sp., stonecrop *Sedum* sp. Nectaring on blanket flower (Figure 31).

Figure 31. Northern checkerspot (Bourquin #1952, #1913).

Edith's checkerspot *Euphydryas editha* Waples: N45.15861, W108.47414, subalpine meadow outside the mouth of Garbage Cave (Figure 32).

Fgure 32. Edith's checkerspot

Anica checkerspot *Euphydryas bernadetta* Bourquin: N45.10235, W108.43970 on mud edge of open pond (Figure 33).

Figure 33. Anica checkerspot (Bourquin).

Field crescent *Phyciodes puchella* Bourquin:N45.09708, W108.44093 open herbaceous/grassy area near edge douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium sp*., stonecrop *Sedum* sp. Nectaring on blanket flower and stonecrop; N45.09708, W108.44093, on mud, edge of open pond. N45.08572, W108.43245 - well vegetated, moderate slope in burnt-over area, formerly a douglas fir stand. Nectaring on pearly everlasting *Anaphalis margaritacea* and yellow-flowered composites. Walton:N45.12700, W108.43068, Wyoming Creek (Figure 34).

Figure 34. Field crescent (Bourquin).

Pale crescent *Phyciodes pallida* Bourquin : N45.09489, W108.43847- well vegetated, moderate slope in burnt-over area, formerly a Douglas fir stand; N45.08572, W108.43245 – well vegetated burnt over slope, formerly douglas fir stand (#1846), N45.10235, W108.43970 on mud, edge of open pond (#1979). Walton: N45.11801, W10845384. Red Pryor Mountain Rd (Figure 35).

Figure 35. Pale crescent (Bourquin) & #1979.

Hoary comma *Polygonia gracilis zephyrus* Bourquin: N45.09708, W108.44093 on mud, edge of open pond (Figure 36).

Figure 36. Hoary comma (Bourquin).

California tortoiseshell *Nymphalis californica* Bourquin: N45.09708, W108.44093 on mud, edge of open pond (Figure 37).

Figure 37. California tortoiseshell (Bourquin).

Milbert's tortoiseshell *Nymphalis milberti* Waples:N45.15861, W108.47414, subalpine meadow (Figure 38).

Figure 38. Milbert's tortoiseshell (Waples).

Small wood-nymph *Cercyonis oetus* Bourquin: N45.05780, W 108.44665 open, dry patch of grass and sage in drainage line west of camp, in general juniper/sage community; N45.05725, W108.44656 Nectaring on rabbit brush *Chrysothamnus nauseosus*, in open juniper community; N45.10235, W108.43970 on mud, edge of open pond; N45.08572, W108.43245 - well vegetated, moderate slope in burnt-over area, formerly a douglas fir stand, nectaring on white-flowered composite. Walton: N45.11570, W108.44768, Red Pryor Mountain road; N45.09769, W108.41106 and N45.11501, W108.41902, Crooked Creek Road (Figure 39).

Figure 39. Small wood-nymph (Bourquin).

Family: Hesperidae *Skippers*

Common sootywing *Pholisora catullus* Bourquin: N45.09708, W108.44093 Open herbaceous/grassy area near edge Douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium sp*., Stonecrop *Sedum* sp. (Figure 40).

Figure 40. Common sootywing (Bourquin).

Draco skipper *Polites draco* Bourquin: N45.09708, W108.44093 on mud, edge of open pond. N45.09708 W108.44093 open herbaceous/grassy area near edge of douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium* sp., stonecrop *Sedum* sp. nectaring on *Sedum* sp. (Figure 41).

Figure 41. Draco skipper.

Skipper sp. #1 and Skipper sp. #2. *Hesperia sp.?* Walton: N45.11801, W10845384 Red Pryor Mountain top. Bourquin : N45.09708, W108.44093 Open herbaceous/grassy area near edge Douglas fir forest. Numerous flowering plants incl. blanket flower *Gaillardia aristata*, bedstraw *Galium* sp., stonecrop *Sedum* sp. Nectaring on unidentified small white flowers (Figure 42).

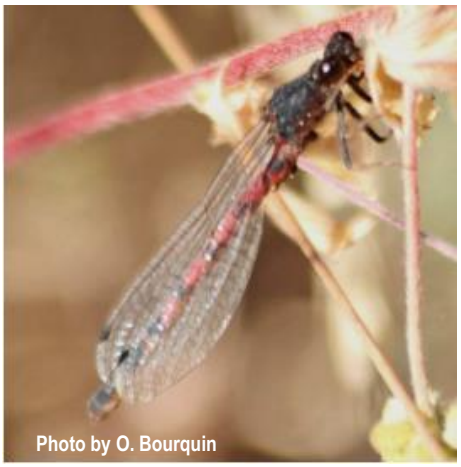
Figure 42. *Skipper* sp.? (Walton) & (Bourquin).


Odonata – Dragonflies and damselflies – 2 species

Very few Odonata were found. Orty Bourquin photographed a few individuals which have been identified. Some other large dragonflies hawking over dry areas were observed but could not be identified. One dot-faced whiteface dragonfly (*Leucorrhina intact)*, was photographed on July 7 in brush along a dry drainage below base camp N45.05780, W108.44665 (Figure 43).

Figure 43. Dot-whiteface dragonfly (Bourquin).

Figure 44.Western red damselfly.



Two additional specimens (male and female) of the western red damselfly, *Amphiagrion abbreviatum,* were photographed on July 8 at Ice Cave Road (Pryor Mtn. Road) in a well vegetated stream bed, N45.18147, W108.43649 and on Crooked Creek Road in a well vegetated stream edge N45.12700, W108.43055 (Figure 44).

Coleoptera - beetles - 21

Beetles were primarily collected by Justin Runyon and Casey Delphia. Identifications were made by Mike Ivie at Montana State University. (Figure 45).

Figure 45. Family: Cleridae.

Family	Species	Latitude	Longitude	Notes	Observers
Carabidae	sp. 1	45.0574	108.4464	Bioblitz campsite	CD & JR
Buprestidae	*Acmaeodera immaculata*	45.0574	108.4464	Bioblitz campsite	CD & JR
Cerambycidae	*Prionus californicus*	45.0574	108.4464	Bioblitz campsite	CD & JR
Cerambycidae	*Cortodera supilosa*	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Cerambycidae	*Gnathacmaeops pratensis*	45.0813	108.4325	yellow pan traps	CD & JR
Cerambycidae	*Batyle ignicollis*	45.0813	108.4325	yellow pan traps	CD & JR
Cerambycidae	*Monochamus scutellatus*	45.0574	108.4464	Bioblitz campsite	CD & JR
Chrysomelidae	Alticinae 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Chrysomelidae	Bruchinae 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Chrysomelidae	Alticini 1	45.0574	108.4464	Bioblitz campsite	CD & JR
Cleridae	*Trichodes ornatus*	45.0813	108.4325	yellow pan traps	CD & JR
Coccinellidae	*Coccinella septempunctata*	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Coccinellidae	Scymninae 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Melyridae	sp. 1	45.0678	108.4373	yellow pan traps	CD & JR
Melyridae	sp. 2	45.0678	108.4373	yellow pan traps	CD & JR
Melyridae	sp. 3	45.0678	108.4373	yellow pan traps	CD & JR
Melyridae	sp. 4	45.0574	108.4464	yell. pan traps at campsite	CD & JR
Melyridae	sp. 5	45.0574	108.4464	yell. pan traps at campsite	CD & JR
Nitidulidae	*Carpophilus*	45.0574	108.4464	yell. pan traps at campsite	CD & JR
Tenebrionidae	Eleodes sp.	45.0574	108.4464	Bioblitz campsite	CD & JR
Tenebrionidae	sp. 2	45.0574	108.4464	Bioblitz campsite	CD & JR

Hymenoptera – bees, wasps, parasitic wasps, micro-hymenoptera, a few ants – 115 species

The Hymenoptera team was led by Casey Delphia. Casey has attended three Montana Bioblitzes now and was very excited at the diversity of the specimens collected in the Pryor Mountains. She collected a total of 310 individual bees, which turned out to represent 57 species from 20 genera. An additional 37 specimens were collected by members of other BioBlitz teams. The specimens included some interesting species including polyester bees (Figure 46). "We had A LOT more than what we got at the APR Bioblitz" said Casey.

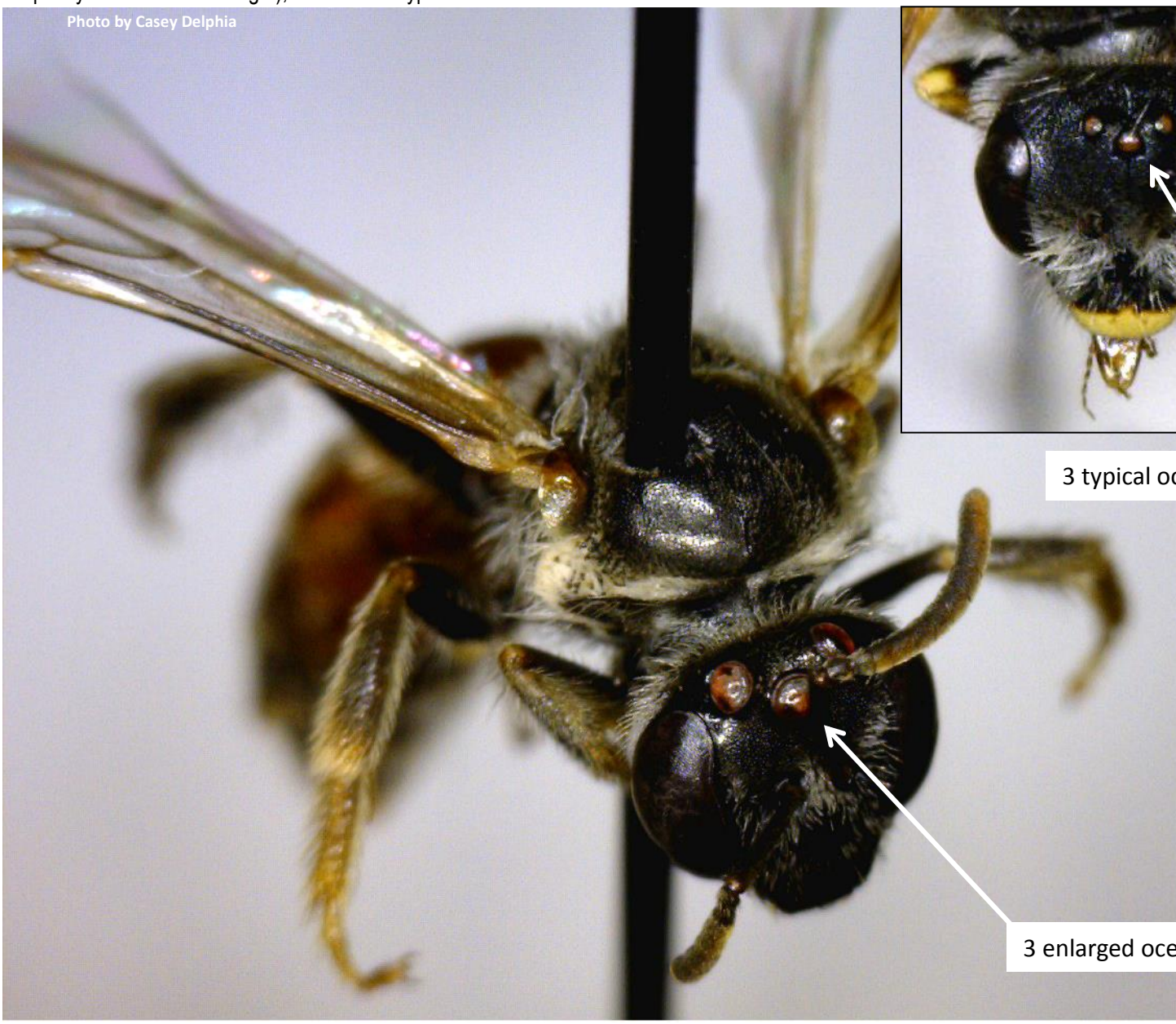
Figure 46. Mating pair of polyester bees (*Colletes* sp.).

One species, a green sweat bee (*Agapostemon coloradinus*), is considered "the rarest of the North American representatives of this genus" and the specimen collected may represent the northernmost record for this species (Figure 47).

Figure 47.Female green sweat bee (Hymenoptera: Halictidae)

They also collected another really neat sweat bee that flies during dusk (low light conditions) and therefore has HUGE ocelli that look really odd (Figure 48).

Figure 48. Female sweat bee *Lasioglossum (Sphecodogastra) texana* (Hymenoptera: Halictidae) with enlarged ocelli (i.e. simple eyes used to detect light); inset shows typical size of ocelli.



Another unique specimen, collected by Damien Austin on the herpetofauna team, is the pollen wasp. These are unique among solitary wasps because they act like bees collecting pollen and nectar to feed their young, rather than arthropod prey. Their knobbed antennae are very distinctive as is their black and yellow coloration. In North America, only one genus of pollen wasps is represented (Figure 49).

Figure 49. A female pollen wasp, *Pseudomasaris* sp., subfamily Masarinae (Hymenoptera: Vespidae).

Total Species list for the Hymenoptera

Family	Species	Lat.	Long.	Notes	Observers
Andrenidae	*Perdita* sp. 1	45.0574	108.4464	yell. pan traps campsite	CD & JR
Andrenidae	*Perdita* sp. 1	45.0701	108.4362	flowering prince flower	Bourquin & Cumin
Andrenidae	*Calliopsis* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Andrenidae	*Andrena* sp. 1	45.0678	108.4373	sweep net, 1825m	CD & JR
Andrenidae	*Andrena* sp. 2	45.1181	108.4520	tundra at treeline	D. Scott
Andrenidae	*Andrena* sp. 3	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Andrenidae	*Andrena* sp. 4 (prunorum?)	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Apidae	*Bombus appositus*	45.1505	108.4734	sweep net, pond	CD & JR
Apidae	*Bombus huntii*	45.1024	108.4398	sweep net, pond	CD & JR
Apidae	*Bombus fervidus*	45.0574	108.4464	Bioblitz campsite	CD & JR
Apidae	*Bombus fervidus*	45.1020	108.4399		Z. Farrand
Apidae	*Bombus flavifrons*	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Apidae	*Bombus bifarius*	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Apidae	*Bombus californicus*	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Apidae	*Bombus griseocollis*	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Apidae	*Bombus griseocollis*	45.0678	108.4373	sweep net, sweet clover	CD & JR
Apidae	*Bombus insularis*	45.0678	108.4373	sweep net, sweet clover	CD & JR
Apidae	*Ceratina neomexicana*	45.0678	108.4373	sweep net, 1825m	CD & JR
Apidae	*Ceratina nanula*	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Apidae	*Anthophora* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Apidae	*Anthophora* sp. 2	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Apidae	*Melissodes* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Apidae	*Melissodes* sp. 2	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Apidae	*Melissodes* sp. 2	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Apidae	*Epeolus* sp. 1	45.1505	108.4734	sweep net, pond at 2600m	CD & JR

Braconidae	sp. 1	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Braconidae	sp. 2	45.1681	108.4679	Crater ice cave, 7897ft	D. Scott
Chalcidoidea	sp. 1	45.0574	108.4464	sweep net at campsite	CD & JR
Chrysididae	*Hedychridium* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Chrysididae	*Pseudospinolia* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Chrysididae	*Chrysura* sp. 1	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Chrysididae	*Neochrysis* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Chrysididae	*Chrysis* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Colletidae	*Hylaeus* sp. 1	45.0574	108.4464	yell. pan traps campsite	CD & JR
Colletidae	*Hylaeus* sp. 1	45.0867	108.4325	yellow pan traps, 2155m	CD & JR
Colletidae	*Hylaeus* sp. 1	45.0857	108.4325	pearly Everlasting	Bourquin & Cumin
Colletidae	*Hylaeus* sp. 2	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Colletidae	*Colletes* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Colletidae	*Colletes* sp. 1	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Colletidae	*Colletes* sp. 2	45.0857	108.4325	pearly Everlasting	Bourquin & Cumin
Crabronidae	*Glenostictia* or *Stictiella* sp.1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Crabronidae	*Glenostictia* or *Stictiella* sp.1	45.0573	108.4466	flowering rabbit brush	O. Bourquin
Crabronidae	*Bembix* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Crabronidae	*Bembix* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Crabronidae	*Bembix* sp. 1	45.0573	108.4466	on flowering milkweed	O. Bourquin
Crabronidae	*Clypeadon* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Crabronidae	*Philanthus* sp. 1	45.0881	108.4070	no notes	Velman & Sevier
Crabronidae	*Oxybelus* sp. 1	45.0574	108.4464	yell. pan traps campsite	CD & JR
Crabronidae	*Oxybelus* sp. 1	45.0678	108.4373	yellow pan traps, 1825m	CD & JR
Crabronidae	*Oxybelus* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Crabronidae	*Oxybelus* sp. 1	45.0857	108.4325	pearly Everlasting	Bourquin & Cumin
Crabronidae	*Oxybelus* sp. 1	45.0701	108.4362	flowering prince flower	Bourquin & Cumin
Crabronidae	*Stizoides* sp. 1	45.0678	108.4373	yellow pan traps, 1825m	CD & JR
Crabronidae	*Astata* or *Dryudella* sp.	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Crabronidae	*Dryudella* sp. 1	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Crabronidae	*Ancistromma* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Crabronidae	*Tachysphex* sp. 1	45.0574	108.4464	yell. pan traps campsite	CD & JR
Crabronidae	*Hoplisoides* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Crabronidae	*Timberlakena* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Crabronidae	*Pulverro* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Crabronidae	*Stigmus* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Crabronidae	*Solierella* sp. 1	45.0678	108.4373	yellow pan traps, 1825m	CD & JR
Formicidae	sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Formicidae	sp. 2	45.0881	108.4070	horsebrush flowers	Velman & Sevier
Formicidae	sp. 3	45.0577	108.4463	400 yards west of camp	Bourquin & Cumin
Halictidae	*Agapostemon femoratus*	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Agapostemon coloradinus*	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR

Halictidae	*Agapostemon virescens*	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Halictidae	*Agapostemon virescens*	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Agapostemon virescens*	45.0573	108.4466	flowering rabbit brush	O. Bourquin
Halictidae	*Agapostemon angelicus/texanus*	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Agapostemon angelicus/texanus*	45.0678	108.4373	yell. pans and swp.net	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1A	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1A	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1A	45.0678	108.4373	yellow pan traps, 1825m	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1A	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1A	45.0701	108.4362	flowering prince flower	Bourquin & Cumin
Halictidae	*Lasioglossum* (Dialictus) sp. 1B	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1B	45.0678	108.4373	yellow pan traps, 1825m	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1B	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1B	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 1B	45.0867	108.4325	yellow pan traps, 2155m	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 2A	45.0678	108.4373	yell. pans and swp net	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 2A	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 2A	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 2A	45.0573	108.4466	flowering rabbit brush	O. Bourquin
Halictidae	*Lasioglossum* (Dialictus) sp. 2A	45.0701	108.4362	flowering prince flower	Bourquin & Cumin
Halictidae	*Lasioglossum* (Dialictus) sp. 2B	45.0228	108.4351	yell.pan traps and swp net	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 2B	45.0574	108.4464	yell. pans & swp net camp	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 2B	45.0678	108.4373	yell. pans and swp net	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 2B	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 2B	45.0573	108.4466	flowering rabbit brush	O. Bourquin
Halictidae	*Lasioglossum* (Dialictus) sp. 3	45.0867	108.4325	yellow pan traps, 2155m	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 3	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Halictidae	*Lasioglossum* (Dialictus) sp. 3	45.0857	108.4325	pearly Everlasting	Bourquin & Cumin
Halictidae	*Lasioglossum* (Dialictus) sp. 4	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Halictidae	*Lasioglossum (Sphecodogastra) texanum*	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Halictidae	*Specodes* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Halictidae	*Halictus confusus*	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Halictidae	*Halictus confusus*	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Halictidae	*Halictus tripartitus*	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Halictus tripartitus*	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Halictidae	*Halictus tripartitus*	45.0678	108.4373	yellow pan traps, 1825m	CD & JR
Halictidae	*Halictus tripartitus*	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Halictidae	*Halictus tripartitus*	45.0867	108.4325	yellow pan traps, 2155m	CD & JR
Halictidae	*Halictus tripartitus*	45.0701	108.4362	flowering prince flower	Bourquin & Cumin
Halictidae	*Halictus tripartitus*	45.0573	108.4466	on flowering milkweed	O. Bourquin
Halictidae	*Lasioglossum* (Evylaeus) sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR

Halictidae	*Lasioglossum* (Evylaeus) sp. 1	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Lasioglossum (s.str.) sisymbrii*	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Lasioglossum (s.str.) sisymbrii*	45.0678	108.4373	sweep net, 1825m	CD & JR
Halictidae	*Lasioglossum (s.str.) sisymbrii*	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Halictidae	*Lasioglossum (s.str.) sisymbrii*	45.0893	108.4289	Lentic, 7407ft	D.A., S.A., A.G.
Halictidae	*Halictus ligatus*	45.0574	108.4464	yell. pan traps campsite	CD & JR
Halictidae	*Halictus ligatus*	45.0228	108.4351	sweep net, rabbitbrush	CD & JR
Halictidae	*Halictus ligatus*	45.0678	108.4373	sweep net and pan traps	CD & JR
Halictidae	*Halictus ligatus*	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Halictidae	*Halictus ligatus*	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Halictidae	*Halictus ligatus*	45.0573	108.4466	on flowering milkweed	O. Bourquin
Halictidae	*Halictus ligatus*	45.0573	108.4466	on flowering rabbit brush	O. Bourquin
Halictidae	*Halictus ligatus*	45.0701	108.4362	flowering prince flower	Bourquin & Cumin
Halictidae	*Halictus farinosus (?)*	45.0573	108.4466	on flowering rabbit brush	O. Bourquin
Halictidae	*Lasioglossum (s.str.) paraforbesii*	45.0893	108.4289	Lentic, 7407ft	D.A., S.A., A.G.
Ichneumonidae	sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Ichneumonidae	sp. 2	45.0574	108.4464	yell. pan traps campsite	CD & JR
Megachilidae	*Osmia* sp. 1	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Megachilidae	*Osmia* sp. 2	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Megachilidae	*Osmia* sp. 3	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Megachilidae	*Osmia* sp. 3	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Megachilidae	*Osmia* sp. 4	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Megachilidae	*Osmia* sp. 4	45.1180	108.4538	on flower, 8443ft	S. Garcia
Megachilidae	*Osmia* sp. 5	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Megachilidae	*Osmia* sp. 5	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Megachilidae	*Osmia* sp. 6	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Megachilidae	*Osmia* sp. 7	45.0867	108.4325	yellow pan traps, 2155m	CD & JR
Megachilidae	*Osmia* sp. 8	45.0867	108.4325	yellow pan traps, 2155m	CD & JR
Megachilidae	*Hoplitis fulgida*	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Megachilidae	*Hoplitis fulgida*	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Megachilidae	*Megachile* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Megachilidae	*Megachile* sp. 2	45.0228	108.4351	sweep net, rabbitbrush	CD & JR
Megachilidae	*Megachile* sp. 3	45.0678	108.4373	sweep net, 1825m	CD & JR
Megachilidae	*Ashmeadiella* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Megachilidae	*Ashmeadiella* sp. 1	45.0701	108.4362	flowering prince flower	Bourquin & Cumin
Megachilidae	*Anthidium formosum*	45.0574	108.4464	yell. pan traps campsite	CD & JR
Megachilidae	*Anthidium* sp. 1	45.0678	108.4373	sweep net, 1825m	CD & JR
Megachilidae	*Dianthidium* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Megachilidae	*Osmia* sp. 9	45.0971	108.4409	edge Douglas fir forest	Bourquin & Cumin
micro hymenoptera	sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
micro hymenoptera	sp. 2	45.0813	108.4325	yellow pan traps, 2065m	CD & JR

micro hymenoptera	sp. 3	45.0701	108.4362	flowering prince flower	Bourquin & Cumin
Mutillidae	sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Mutillidae	sp. 2	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Pompilidae	sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Pompilidae	sp. 1	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Pompilidae	sp. 2	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Pompilidae	sp. 3	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Pompilidae	sp. 3	45.0867	108.4325	yellow pan traps, 2155m	CD & JR
Pompilidae	sp. 4	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Sphecidae	*Sceliphron* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Sphecidae	*Chalybion* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Sphecidae	*Ammophila* sp. 1	45.0574	108.4464	yell. pan traps campsite	CD & JR
Sphecidae	*Ammophila* sp. 1	45.0678	108.4373	yellow pan traps, 1825m	CD & JR
Sphecidae	*Ammophila* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Sphecidae	*Ammophila* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Sphecidae	*Ammophila* sp. 1	45.0971	108.4409	Douglas fir forest	Bourquin & Cumin
Sphecidae	*Podalonia* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Sphecidae	*Prionyx* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Sphecidae	*Prionyx* sp. 1	45.0574	108.4464	yell. pan traps campsite	CD & JR
Sphecidae	*Prionyx* sp. 1	45.0678	108.4373	yellow pan traps, 1825m	CD & JR
Sphecidae	*Prionyx* sp. 1	45.0058	108.4300	sweep net, Gyp Springs	CD & JR
Sphecidae	*Prionyx* sp. 1	45.0573	108.4466	flowering rabbit brush	O. Bourquin
Tiphiidae	sp. 1	45.0228	108.4351	yellow pan traps, Helt Rd.	CD & JR
Vespidae	*Parancistrocerus* sp. 1	45.0574	108.4464	yell. pan traps campsite	CD & JR
Vespidae	*Stenodynerus* sp. 1	45.0813	108.4325	yellow pan traps, 2065m	CD & JR
Vespidae	*Stenodynerus* sp. 1	45.0573	108.4466	on flowering milkweed	O. Bourquin
Vespidae	*Odynerus* sp. 1	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Vespidae	*Ancistrocerus* sp. 1	45.0228	108.4351	swp net, Helt Rd., 1500m	CD & JR
Vespidae	*Ancistrocerus* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Vespidae	*Euodynerus* sp. 1	45.0574	108.4464	sweep net at campsite	CD & JR
Vespidae	*Ancistrocerus* sp. 2	45.0857	108.4325	pearly Everlasting	Bourquin & Cumin
Vespidae: Masarinae	*Pseudomasaris* sp. 1	45.0868	108.4268	rocky outcrop, 7281ft	D. Austin
Vespidae: Polistinae	*Mischocyttarus flavitarsus*	45.0573	108.4466	on flowering milkweed	O. Bourquin

Diptera – Flies and Midges - 122 species

Justin Runyon from the Forestry Sciences lab in Bozeman is another repeat BioBlitz scientist. He led the Diptera team and worked alongside Casey Delphia using pan traps and sweep nets for most of their collecting (Figure 50). Justin collected a total of 105 species and was given specimens by other collectors from different teams. After Justin identified these additional specimens he had another 17 species. This shows how important collaborations are at a BioBlitz and the contribution citizen scientists can make to our knowledge of species in an area.

Figure 51. A micro bee fly (left) and a bee fly (right) found at the Bioblitz.

Two species of rarely encountered micro bee flies (Family: Mythicomyiidae) and nine species of more common bee flies (Family: Bombyliidae) were captured during the Bioblitz, and nicely illustrate the variation in size displayed by flies in the Pryor Mountains (Figure 51).

Figure 50. Casey Delphia setting out yellow pan traps for collecting pollinators.

Total Species List of Diptera

Species	Latitude	Lat.	Long.	Notes	Obs.
Anthomyiidae	sp. 1	45.1181	108.4520	tundra at tree line	CD & JR
Anthomyiidae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Anthomyiidae	sp. 3	45.0058	108.4300	Gyp Springs	CD & JR
Anthomyiidae	sp. 4	45.0058	108.4300	Gyp Springs	CD & JR
Anthomyiidae	sp. 2	45.0573	108.4466	flowering rabbit brush	O. Bourquin

Asilidae	*Cyrtopogon bimacula*	45.0900	108.4307	Forbs and grass (burned area)	M. Kirst
Asilidae	sp. 3	45.1020	108.4400	Lentic	D.A., A.G., S.A.
Asilidae	sp. 4	45.0949	108.4385	edge Doug-fir forest	Bourquin & Cumin
Asilidae	*Cyrtopogon bimacula*	45.0949	108.4385	edge Doug-fir forest	Bourquin & Cumin
Asilidae	sp. 2	45.1018	108.4401		K. Ostovar
Asilildae	*Cyrtopogon bimacula*	45.0813	108.4325	yellow pan traps	CD & JR
Asilildae	*Machimus* sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Bombyliidae	*Phthiria* sp. 1	45.0574	108.4464	yellow pan traps at campsite	CD & JR
Bombyliidae	sp. 2	45.0574	108.4464	yellow pan traps at campsite	CD & JR
Bombyliidae	sp. 3	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Bombyliidae	sp. 4	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Bombyliidae	sp. 5	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Bombyliidae	sp. 6	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Bombyliidae	sp. 7	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Bombyliidae	sp. 8	45.0590	108.4140		CD & JR
Bombyliidae	sp. 9	45.0678	108.4373	from sweet clover	CD & JR
Bombyliidae	sp. 9	45.0949	108.4385	edge Doug-fir forest	Bourquin & Cumin
Calliphoridae	sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Cecidomyiidae	sp. 1	45.1681	108.4679	Crater ice cave-on snow patch	D.A., A.G., S.A.
Ceratopogonidae	sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Ceratopogonidae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Chironomidae	sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Chironomidae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Chironomidae	sp. 1	45.1504	108.4734	Lentic	D.A., A.G.
Chironomidae	sp. 1	45.1024	108.4397	Around muddy pond, open	C. Cumin
Chloropidae	sp. 1	45.0574	108.4464	yellow pan traps at campsite	CD & JR
Chloropidae	sp. 1	45.0678	108.4373	yellow pan traps	CD & JR
Chloropidae	sp. 2	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Chloropidae	sp. 3	45.0058	108.4300	Gyp Springs	CD & JR
Chloropidae	sp. 4	45.0058	108.4300	Gyp Springs	CD & JR
Chloropidae	sp. 5	45.0058	108.4300	Gyp Springs	CD & JR
Chloropidae	sp. 6	45.0058	108.4300	Gyp Springs	CD & JR
Chloropidae	sp. 7	45.0058	108.4300	Gyp Springs	CD & JR
Conopidae	*Myopa* sp. 1	45.0574	108.4464	yellow pan traps at campsite	CD & JR
Conopidae	*Physoconops* sp. 1	45.0813	108.4325	yellow pan traps	CD & JR
Conopidae	*Myopa* sp. 1	45.0813	108.4325	yellow pan traps	CD & JR
Conopidae	*Zodion* sp. 1	45.0813	108.4325	yellow pan traps	CD & JR
Conopidae	*Physoconops* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR

Conopidae	*Myopa* sp. 1	45.0573	108.4466	on flowering milkweed, 5511ft	O. Bourquin
Culicidae	sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Diastatidae	*Diastata* sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Dixidae	*Dixella* sp.	45.1681	108.4679	Crater ice cave-on snow patch	D.A., A.G., S.A.
Dolichopodidae	*Medetera veles*	45.0574	108.4464	yellow pan traps campsite	CD & JR
Dolichopodidae	*Medetera veles*	45.0813	108.4325	yellow pan traps	CD & JR
Dolichopodidae	*Hydrophorus philombrius*	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Dolichopodidae	*Hydrophorus aestuum*	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Dolichopodidae	*Hydrophorus eldoradensis*	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Dolichopodidae	*Hydrophorus philombrius*	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Dolichopodidae	*Hydatostega cerutias*	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Dolichopodidae	*Pelastoneurus vagans*	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Dolichopodidae	*Pelastoneurus* sp. 2	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Dolichopodidae	*Argyra* sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Argyra condomina*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Pelastoneurus vagans*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	Campsicnemus sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Medetera* sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Peloropeodes acuticornis*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Micromorphus* sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Dolichopus obcordatus*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Dolichopus* sp. 3	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Dolichopus bifractus*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Dolichopus ramifer*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Hercostomus setosus*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Teuchophorus diminucosta*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Rhaphium effilatum*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Diaphorus fuscus*	45.0058	108.4300	Gyp Springs	CD & JR
Dolichopodidae	*Chrysotus albohirtus*	45.0058	108.4300	Gyp Springs	CD & JR
Drosophilidae	sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Empididae	*Drapetis* sp. 1	45.0813	108.4325	yellow pan traps	CD & JR
Empididae	*Drapetis* sp. 2	45.0813	108.4325	yellow pan traps	CD & JR
Empididae	sp. 3	45.0058	108.4300	Gyp Springs	CD & JR
Empididae	sp. 4	45.0058	108.4300	Gyp Springs	CD & JR
Empididae	sp. 5	45.0058	108.4300	Gyp Springs	CD & JR
Ephydridae	sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Ephydridae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Ephydridae	*Ochthera* sp. 1	45.0058	108.4300	Gyp Springs	CD & JR

Ephydridae	sp. 3	45.0058	108.4300	Gyp Springs	CD & JR
Ephydridae	sp. 4	45.0058	108.4300	Gyp Springs	CD & JR
Ephydridae	sp. 5	45.0058	108.4300	Gyp Springs	CD & JR
Ephydridae	sp. 6	45.0058	108.4300	Gyp Springs	CD & JR
Ephydridae	sp. 1	45.1024	108.4397	Around muddy pond, open	C. Cumin
Ephydridae	sp. 1	45.1681	108.4679	Crater ice cave-on snow patch	D.A., A.G., S.A.
Heleomyzidae	sp. 1	45.1681	108.4679	Crater ice cave-on snow patch	D.A., A.G., S.A.
Muscidae	sp. 1	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Muscidae	*Lispe* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Muscidae	sp. 1	45.1504	108.4734	Lentic	D.A., A.G.
Muscidae	sp. 1	45.1024	108.4397	Around muddy pond, open	C. Cumin
Mycetophilidae	sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Mythicomyiidae	*Mythicomyia* sp. 1	45.0574	108.4464	yellow pan traps at campsite	CD & JR
Mythicomyiidae	*Glabellula* sp. 1	45.0574	108.4464	yellow pan traps at campsite	CD & JR
Nemestrinidae	*Neorhynchocephalus* sp. 1	45.0977	108.4111	Crooked Crk Rd, hollow	CD & JR
Phoridae	sp. 1	45.0678	108.4373	yellow pan traps	CD & JR
Psilidae	sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Rhagionidae	sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Rhagionidae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Sarcophagidae	sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Sarcophagidae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Sarcophagidae	sp. 3	45.0058	108.4300	Gyp Springs	CD & JR
Sarcophagidae	sp. 1	45.1020	108.4400	Lentic	D.A., A.G., S.A.
Scathophagidae	sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Scathophagidae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Scenopinidae	*Scenopinus* sp. 1	45.0574	108.4464	yellow pan traps at campsite	CD & JR
Sciaridae	sp. 1	45.1681	108.4679	Crater ice cave-on snow patch	D.A., A.G., S.A.
Sepsidae	sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Simuliidae	sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Simuliidae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Sphaeroceridae	sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Sphaeroceridae	sp. 2	45.0058	108.4300	Gyp Springs	CD & JR
Sphaeroceridae	sp. 3	45.0058	108.4300	Gyp Springs	CD & JR
Syrphidae	sp. 1	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Syrphidae	sp. 2	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Syrphidae	sp. 3	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Syrphidae	sp. 4	45.0058	108.4300	Gyp Springs	CD & JR
Tabanidae	*Tabanus* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR

Tabanidae	*Chrysops* sp. 1	45.0058	108.4300	Gyp Springs	CD & JR
Tabanidae	sp. 3	45.0058	108.4300	Gyp Springs	CD & JR
Tabanidae	sp. 1	45.0971	108.4409	edge Douglas fir forest	Bourquin & Cumin
Tachinidae	sp. 1	45.0574	108.4464	yellow pan traps at campsite	CD & JR
Tachinidae	sp. 2	45.0678	108.4373	yellow pan traps	CD & JR
Tachinidae	sp. 3	45.0678	108.4373	yellow pan traps	CD & JR
Tachinidae	sp. 4	45.0678	108.4373	yellow pan traps	CD & JR
Tachinidae	sp. 2	45.0813	108.4325	yellow pan traps	CD & JR
Tachinidae	sp. 5	45.0813	108.4325	yellow pan traps	CD & JR
Tachinidae	sp. 6	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Tachinidae	sp. 6	45.1505	108.4734	sweep net, pond at 2600m	CD & JR
Tachinidae	sp. 6	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Tachinidae	sp. 7	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Tachinidae	sp. 7	45.1020	108.4400		CD & JR
Tachinidae	sp. 8	45.1181	108.4520		CD & JR
Tachinidae	sp. 6	45.0573	108.4466	flowering rabbit brush	O. Bourquin
Tachinidae	sp. 7	45.0573	108.4466	on flowering rabbit brush	O. Bourquin
Tachinidae	sp. 7	45.0893	108.4289	Lentic	D.A., A.G., S.A.
Tachinidae	sp. 7	45.1024	108.4397	Around muddy pond, open	C. Cumin
Tachinidae	sp. 7	45.1157	108.4477		D. Walton
Tachinidae	sp. 7	45.0857	108.4409	pearly Everlasting	Bourquin & Cumin
Tachinidae	sp. 8	45.0857	108.4409	flowering pearly Everlasting	Bourquin & Cumin
Tachinidae	sp. 7	45.0573	108.4466	on flowering milkweed, 5511ft	O. Bourquin
Tethinidae	*Pelomyia* sp.	45.0058	108.4300	Gyp Springs	CD & JR
Therevidae	sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Therevidae	sp. 2	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Therevidae	sp. 3	45.1024	108.4398	sweep net, pond at 2400m	CD & JR
Xylophagidae	*Arthropeas* sp. 1	45.1024	108.4398	sweep net, pond at 2400m	CD & JR

Other Invertebrates - 7 species

This group includes millipedes, annelid worms, crustaceans Hemiptera (Scutelleridae sp. 1) N45.0574, W108.4464, Collembola, Microcoryphia, and terrestrial mollusks. Only a few of these specimens in total were collected and some were sent off to experts.

Justin Runyon identified some of the springtails and jumping bristletails. Springtails (Hypogastruridae - (*Hypogastrura* sp.1) were found on snow near Crater Ice cave (N45.1681, W108.4679). In camp several people collected Microcoryphia (N45.0574, W108.4464) , also known as Archaeognatha, an order of wingless insects commonly called jumping bristletails, which are some of the least evolutionarily changed insects.

Bruce Snyder at the University of Kansas helped identify the millipede and worms that were collected. Little is known about native worm distribution in Montana. General theory holds that they should not exist in areas with glacial history. European invasive species have been moved all over the world for hundreds of years, a practice which still continues today. Common transport avenues include earthmoving activities, fish bait, soil with horticultural plants, and possibly vermicomposting. There is evidence in some areas that earthworms are causing changes in soil and ground litter composition which in turn is causing the declines of certain species of plants. The earthworm collected at N 45.06266, W108.39008 was identified as (*Lumbricus rubellus*) a European species which may be a new record for Montana. Bruce Snyder mentioned that the millipede was a female which makes identification challenging but placed it either in the Conotylidae or Adritylidae family.

Bruce Snyder remarked*," Intentionally imported European earthworms were probably brought westward as the land was settled - I've heard anecdotes about earthworms still being found on abandoned homestead sites. One of our concerns is that we don't know how badly invaded areas are. Projects like this may give us some idea!"*

Figure 51. (*Oreohelix subrudis).*

Paul Hendricks with the Montana Natural Heritage Program identified the terrestrial mollusk shells. "Terrestrial mollusks are an understudied group in Montana," said Paul. While we did not collect very many specimens, the Pryor Mountains are known for ubiquitous conical snail shells often found littering the ground in certain areas. A few of the specimens were collected and their identification confirmed as (*Oreohelix subrudis)* (Figure 51).

Figure 52. Dorsal and ventral view of fish louse (8 mm) collected during sweeping of riparian areas for Arachnids. Photo – Denver Museum of Nature and Science.

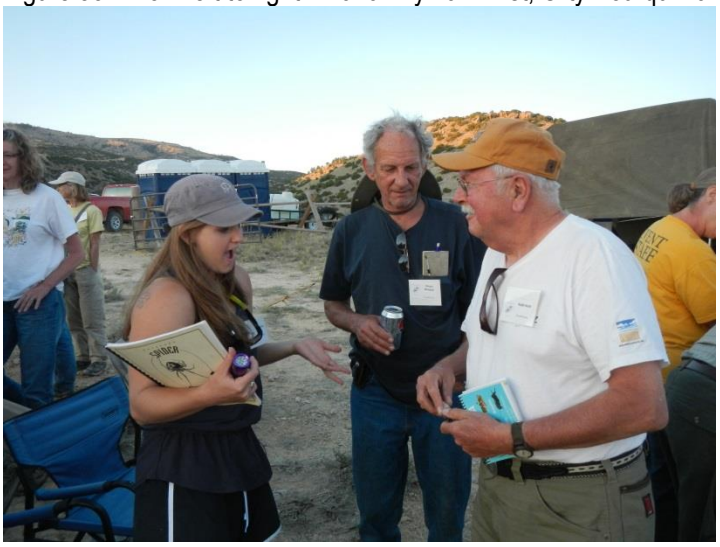
Fish Louse
Family: Argulidae – a group of parasitic crustaceans of uncertain position within the Maxillopoda (Figure 52).
Collected by RMC student B. Ruff N 45.1344, W 108.434.

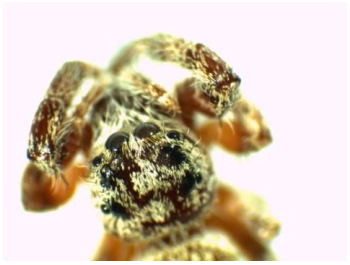
Arachnidae – Spiders 39 species– Identifications still in progress for scorpions and opiliones

A total of 139 spider specimen vials (some with more than one specimen) were sent to the Denver Museum of Nature and Science (DMNS). The arachnid team was led by Marian Lyman Kirst (Figure 53). Marian took her team out at night with black lights to search for scorpions and helped the team cover many different habitat types. It took over a year for the specimens to be examined since there are so few spider experts in the country that can do this type of work. Dr. Paula Cushing and her team at the DMNS is conducted the identification work. Many of our specimens included juveniles which are difficult to identify. The final list contains confirmed identifications for specimens that are now housed at the DNMS. To our knowledge no spider identification work has been done in the Pryor Mountains so these should all be interesting and valuable records. More details on these records can be found in the DMNS database http://symbiota4.acis.ufl.edu/scan/portal/collections/harvestparams.php

In early August a group of students from an Advanced Field Techniques class at Rocky Mountain College returned to the project area and did more spider collections on an elevational gradient up the Crooked Creek Road. These were also sent to Denver and are included in the Arachnid list below.

Figure 53. From left to right - Marian Lyman Kirst, Orty Bourquin and Ralph Scott discuss invertebrate findings.





Order	Family	Species Name	Collectors	Date	Latitutde	Longitude
Araneae	Agelenidae	Agelenopsis potteri	Hunter, B.	9/18/2012	44.585611	-108.164222
Araneae	Araneidae	Argiope trifasciata	Sapa, Ali	9/1/2012	45.13446	-108.43401
Araneae	Araneidae	Argiope trifasciata	Hunter B.	9/18/2012	44.585611	-108.164222
Araneae	Araneidae	Argiope trifasciata	Hunter, B.	9/1/2012	45.13446	-108.43401
Araneae	Araneidae	Cyclosa conica	Benzel, J.	9/2/2012	45.25	-108.5
Araneae	Araneidae	Larinioides patagiatus	Hunter, B.	9/18/2012	44.585611	-108.164222
Araneae	Araneidae	Larinioides patagiatus	Waller, B.	7/7/2012	45.12378	-108.42977
Araneae	Dictynidae	Dictyna coloradensis	Cumin, C.	7/7/2012	45.05772	-108.44626
Araneae	Dictynidae	Dictyna coloradensis	Kirst, M.	7/7/2012	45.10078	-108.43864
Araneae	Dictynidae	Hackmania saphes	Kirst, M.	7/7/2012	45.11741	-108.4509
Araneae	Dictynidae	Hackmania saphes	Benzel, J.	9/1/2012	45.130342	-108.379864
Araneae	Gnaphosidae	Drassyllus lamprus	Kirst, M.	7/6/2012	45.05763	-108.45529
Araneae	Gnaphosidae	Gnaphosa californica	Kirst, M.	7/6/2012	45.05427	-108.46391

Araneae	Gnaphosidae	Gnaphosa muscorum	Ostovar, K.	7/8/2012	45.1018	-108.44008
Araneae	Gnaphosidae	Gnaphosa muscorum	Ostovar, K.	7/8/2012	45.13105	-108.45743
Araneae	Gnaphosidae	Gnaphosa muscorum	Garcia, A.	7/7/2012	45.0868	-108.42681
Araneae	Gnaphosidae	Gnaphosa muscorum	Ostovar, K.	7/8/2012	45.13105	-108.45743
Araneae	Gnaphosidae	Herpyllus ecclesiasticus	Hunter, B.	9/18/2012	44.585611	-108.164222
Araneae	Gnaphosidae	Micaria rossica	Waples	7/7/2012	45.15861	-108.47414
Araneae	Gnaphosidae	Orodrassus coloradensis	Waples	7/7/2012	45.16183	-108.4679
Araneae	Gnaphosidae	Zelotes puritanus	Kirst, M.	7/7/2012	45.10188	-108.43982
Araneae	Linyphiidae	Frontinella communis	Unknown	7/7/2012	45.06266	-108.39208
Araneae	Linyphiidae	Pityohyphantes	Farrand, Z.	9/1/2012	45.17578	-108.46326
Araneae	Linyphiidae	Pityohyphantes kamela	Moorhead, A.	9/1/2012	45.17578	-108.46326
Araneae	Linyphiidae	Pityohyphantes kamela	Sapa, Ali	9/1/2012	45.17578	-108.46326
Araneae	Lycosidae	Pardosa	Ostovar, K.	7/8/2012	45.1018	-108.44008
Araneae	Lycosidae	Pardosa concinna	Kirst, M.	7/7/2012	45.10188	-108.43982
Araneae	Lycosidae	Pardosa concinna	Lansdown, H.	7/7/2012	45.0895	-108.42887
Araneae	Lycosidae	Pardosa distincta	Ruff, B.	9/1/2012	45.228889	-108.727778
Araneae	Lycosidae	Pardosa utahensis	A., D.	7/7/2012	45.10201	-108.43999
Araneae	Lycosidae	Schizocosa mccooki	Moorhead, A.	9/1/2012	45.064832	-108.395509
Araneae	Lycosidae	Schizocosa mccooki	Godtel, A.	7/8/2012	45.08974	-108.44395
Araneae	Philodromidae	Philodromus histrio	Kirst, M.	7/7/2012	45.11741	-108.4509
Araneae	Philodromidae	Thanatus coloradensis	Austin, D.	7/7/2012	45.0868	-108.42681
Araneae	Philodromidae	Thanatus formicinus	Kirst, M.	7/7/2012	45.10188	-108.43982
Araneae	Philodromidae	Tibellus oblongus	Cumin, C.	7/7/2012	45.10235	-108.4397
Araneae	Philodromidae	Tibellus oblongus	Hunter, B.	9/18/2012	44.585611	-108.164222
Araneae	Philodromidae	Tibellus oblongus	Kirst, M.	7/7/2012	45.10078	-108.53864
Araneae	Philodromidae	Tibellus oblongus	Farrand Z.	7/7/2012	45.05578	-108.43999
Araneae	Pholcidae	Pholcophora americana	Sapa, Ali	9/1/2012	45.064832	-108.395508
Araneae	Salticidae	Dendryphantes nigromaculatus	Sapa, Ali	9/1/2012	45.064832	-108.395508
Araneae	Salticidae	Dendryphantes nigromaculatus	Kirst, M.	7/7/2012	45.11741	-108.4509
Araneae	Salticidae	Evarcha proszynskii	Moorhead, A.	9/1/2012	45.13446	-108.43401
Araneae	Salticidae	Hentzia palmarum	Benzel, J.	9/1/2012	45.130344	-108.379864
Araneae	Salticidae	Hentzia palmarum	Hunter, B.	9/18/2012	44.585611	-108.164222
Araneae	Salticidae	Hentzia palmarum	Ruff, B.	9/1/2012	45.1344	-108.454
Araneae	Salticidae	Hentzia palmarum	Kirst, M.	7/7/2012	45.15716	-108.47335
Araneae	Salticidae	Hentzia palmarum	Sopa, Ali	9/1/2010	45.13446	-108.43401
Araneae	Salticidae	Hentzia palmarum	Moorhead, A.	9/1/2012	45.13446	-108.43401
Araneae	Salticidae	Paraphidippus aurantius	Kirst, M.	7/7/2012	45.15716	-108.47335
Araneae	Salticidae	Pelegrina aeneola	Benzel, J.	9/2/2012	45.116292	-108.231376
Araneae	Salticidae	Pelegrina proterva	Hunter, B.	9/18/2012	44.585611	-108.164222
Araneae	Tetragnathidae	Tetragnatha versicolor	Ruff, B.	9/1/2012	45.1344	-108.434

Araneae	Theridiidae	Steatoda albomaculata	Kirst, M.	7/6/2012	45.05763	-108.45529
Araneae	Theridiidae	Steatoda albomaculata	Kirst, M.	7/6/2012	45.05763	-108.45529
Araneae	Theridiidae	Theridion neomexicanum	Benzel, J.	9/1/2012	45.130358	-108.379864
Araneae	Thomisidae	Coriarachne brunneipes	Ruff, B.	9/1/2012	45.0648	-108.3955
Araneae	Thomisidae	Mecaphesa celer	Kirst, M.	7/7/2012	45.10188	-108.43982
Araneae	Thomisidae	Xysticus elegans	Hunter, B.	9/28/2012	44.585611	-108.164222
Araneae	Thomisidae	Xysticus elegans	Kirst, M.	7/7/2012	45.06216	-108.44377
Araneae	Titanoecidae	Titanoeca nivalis	Hunter, B.	9/1/2012	45.064832	-108.395509
	Opiliones	Not Yet Identified to Species	14			
	Scorpiones	Not Yet Identified to Species	6			

Fish – 1 species

The Pryor Mountains have one of the eastern most records for Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*). Two of these were seen in the Crooked Creek drainage. This drainage previously had nonnative brook and brown trout. A removal project was conducted a few years ago and a barrier installed to keep these invasive out of the upper reaches of Crooked Creek. Other species of fish exist in the Pryor Mountains in other drainages (such as Sage Creek) but not within the area of this BioBlitz survey.

Mammals – 8 bats, 15 terrestrial mammals = 23 species

Many people from different teams reported mammal sightings. There were two taxonomic focus teams for small terrestrial mammals and for bats. The bat team used acoustic detectors and mist nets. Two mist net teams led by (Barb Pitmann, Tony Burrows, Amie Shovlain and Kayhan Ostovar) worked on the night of July 7. Acoustic detectors were placed by Zach Farrand, Tony Burrows, Carl Bakker and Brenda Wilson. One team headed up Red Pryor to a small pond at N45.15045 and W108.47359. This site is fairly exposed to wind and in a subalpine habitat, making it challenging for mist netting. The net set up included two 9 –m nets and one 12-m net on one side of a pond. Three long-legged myotis (*Myotis volans*) were caught. The second team descended into Crooked Creek canyon to a site just upstream of the fish barrier at N45.06218, W108.39051, where they set up one triple high canopy 12-m, two 6-m and one 9-m nets (Figure 53).

Figure 53. Amie Shovlain removing a bat from a mist net.

This site turned out to be very productive with a total of 39 bats caught, comprised of seven species: long-eared myotis (*Myotis evotis)* (5), little brown bat (*Myotis lucifugus)* (4), hoary bat (*Lasiurus cinereus)* (4), Western small-footed myotis, (*Myotis ciliolabrum)* (2), long-legged myotis (*Myotis volans)* (5), big brown bat (*Eptesicus fuscus)* (17), and two unidentifiable *Myotis sp.* (2).

Two SM2 recorders with external microphones were also set up at Gyp Springs. They recorded big brown bat, silver haired bat, Western small-footed myotis, and long-eared myotis. Peterson D240x with Zoom recorders were placed at N45.05140, W108.45142 in open sage brush habitat on 7/6/12 recorded big brown bat, western small-footed myotis and long-eared myotis. Another Peterson D240x detector placed at N45.05192, W108.45063 near a man-made pond on 7/6/12 recorded big brown bat, hoary bat, Western small-footed myotis, long-eared myotis and fringed myotis (*Myotis thysanodes*). On 7/7/12 three D240x Peterson detectors were placed in Crooked Creek canyon not far from the mist net site at N45.06384, W108.39036, N45.06311, W 108.38976, and N45.06169, N108.39026.

These three detectors recorded a total of eight species: big brown bat, hoary bat, silver haired bat, Western small-footed myotis, long-eared myotis, little brown bat, and long-legged myotis, and fringed myotis. Acoustic recordings documented similar species as those captured by the mist nets except for two additional species, silver haired bat, and fringed myotis.

After discovering such a good survey site a team returned to the Crooked Creek canyon site on August 31. A total of 31 individuals were captured this time. Similar species were detected except no (*Myotis ciliolabrum)* were recorded and we did capture a silver-haired bat, a species that was previously only recorded acoustically at the site.

The terrestrial small mammal team was led by Mike Schilz and Joseph Benzel from Rocky Mountain College. This team used a variety of small mammal traps in different habitat types.

Figure 54. Yellow pine chipmunk.

Species captured were, deer mouse (*Peromyscus maniculatus*), white-footed mouse (*Peromyscus leucopus*), Ord's kangaroo rat (*Dipodomys ordii*), and least chipmunk (*Tamias minimus*). Additional mammal sightings included black bear (*Ursus americanus*), red squirrel (*Tamiasciurus hudsonicus*), mule deer (*Odocoileus hemionus*), red fox (*Vulpes vulpes*), bighorn sheep (*Ovis canadensis*), yellow pine chipmunk (*Tamias amoenus*)(Figure 54), yellow-bellied marmot (*Marmota flaviventris*), bushy-tailed woodrat (*Neotoma cinerea*) desert cottontail (*Sylvilagus audubonii*)and white-tailed jackrabbit (*Lepus townsendii)* and coyote *(Canis latrans).*

Birds – 83 species

The bird team led by Matt Keefer, Brad Hall and Cameron Sapp covered a large amount of the BioBlitz survey area in small teams. A total of 83 species were recorded, including 11 Species of Concern. Bear Canyon in the Pryor Mountains has been identified as an Important Bird Area (IBA). The area of coverage for this BioBlitz did not include Bear Canyon but included an area with similar habitat that has probably not previously been well surveyed. The team was surprised to find some of the species known from Bear Canyon in other areas. Of particular interest were sightings of blue-gray gnatcatcher, gray flycatcher, Cordilleran flycatcher, Brewer's sparrow, black-backed woodpecker, Lewis's woodpecker and sage thrasher (Figure 55).

Figure 55. Bird team strategizing before heading out.

Bird Species List

Common Name	Genus	Species
American Crow	*Corvus*	*brachyrhynchos*
American Dipper	*Cinclus*	*mexicanus*
American Goldfinch	*Carduelis*	*tristis*
American Kestrel	*Falco*	*sparverius*
American Robin	*Turdus*	*migratorius*
American Three-toed Woodpecker	*Picoides*	*dorsalis*
Black-backed Woodpecker	*Picoides*	*arcticus*
Black-billed Magpie	*Pica*	*hudsonia*
Black-capped Chickadee	*Poecile*	*atricapilla*
Blue-gray Gnatcatcher	*Polioptila*	*caerulea*
Brewer's Blackbird	*Euphagus*	*cyanocephalus*
Brewer's Sparrow	*Spizella*	*breweri*
Broad-tailed Hummingbird	*Selasphorus*	*platycercus*
Brown Creeper	*Certhia*	*americana*
Brown-headed Cowbird	*Molothrus*	*ater*
Bullock's Oriole	*Icterus*	*bullockii*
Calliope Hummingbird	*Stellula*	*calliope*
Canyon Wren	*Catherpes*	*mexicanus*
Cassin's Finch	*Carpodacus*	*cassinii*
Cedar Waxwing	*Bombycilla*	*cedrorum*
Chipping Sparrow	*Spizella*	*passerina*
Clark's Nutcracker	*Nucifraga*	*columbiana*
Common Nighthawk	*Chordeiles*	*minor*
Common Poorwill	*Phalaenoptilus*	*nuttallii*
Common Raven	*Corvus*	*corax*

Cordilleran Flycatcher	*Empidonax*	*occidentalis*
Dark-eyed Junco	*Junco*	*hyemalis*
Downey Woodpecker	*Picoides*	*pubescens*
Dusky Flycatcher	*Empidonax*	*oberholseri*
Dusky grouse	*Dendragapus*	*obscurus*
Eastern Kingbird	*Tyrannus*	*tyrannus*
Golden Eagle	*Aquila*	*chrysaetos*
Golden-crowned Kinglet	*Regulus*	*satrapa*
Gray Catbird	*Dumetella*	*carolinensis*
Gray Flycatcher	*Empidonax*	*wrightii*
Gray Partridge	*Perdix*	*perdix*
Great Horned Owl	*Bubo*	*virginianus*
Green-tailed Towhee	*Pipilo*	*chlorurus*
Hairy Woodpecker	*Picoides*	*villosus*
Hermit Thrush	*Catharus*	*guttatus*
Horned Lark	*Eremophila*	*alpestris*
House Finch	*Carpodacus*	*mexicanus*
House Wren	*Troglodytes*	*aedon*
Lark Sparrow	*Chondestes*	*grammacus*
Lazuli Bunting	*Passerina*	*amoena*
Lewis's Woodpecker	*Melanerpes*	*lewis*
Lincoln's Sparrow	*Melospiza*	*lincolnii*
Loggerhead Shrike	*Lanius*	*ludovicianus*
MacGillivray's Warbler	*Oporornis*	*tolmiei*
Mountain Bluebird	*Sialia*	*currucoides*
Mountain Chickadee	*Poecile*	*gambeli*
Mourning Dove	*Zenaida*	*macroura*
Northern Flicker	*Colaptes*	*auratus*
Peregrine Falcon	*Falco*	*peregrinus*
Pine Siskin	*Carduelis*	*pinus*
Pinyon Jay	*Gymnorhinus*	*cyanocephalus*
Prairie Falcon	*Falco*	*mexicanus*
Red-breasted Nuthatch	*Sitta*	*canadensis*
Red-eyed Vireo	*Vireo*	*flavoviridis*
Red-tailed Hawk	*Buteo*	*jamaicensis*
Rock Wren	*Salpinctes*	*obsoletus*
Ruby-crowned Kinglet	*Regulus*	*calendula*
Sage Thrasher	*Oreoscoptes*	*montanus*
Savannah Sparrow	*Passerculus*	*sandwishensis*
Say's Phoebe	*Sayornis*	*saya*
Song Sparrow	*Melospiza*	*melodia*
Spotted Towhee	*Pipilo*	*maculatus*

Swainson's Thrush	*Catharus*	*ustulatus*
Townsend's Solitaire	*Myadestes*	*townsendi*
Tree Swallow	*Tachycineta*	*bicolor*
Turkey Vulture	*Cathartes*	*aura*
Vesper Sparrow	*Pooecetes*	*gramineus*
Violet-green Swallow	*Tachycineta*	*thalassina*
Warbling Vireo	*Vireo*	*gilvus*
Western Meadowlark	*Sturnella*	*neglecta*
Western Tanager	*Piranga*	*ludoviciana*
Western Wood-Pewee	*Contopus*	*sordidulus*
White-breasted Nuthatch	*Sitta*	*carolinensis*
White-crowned Sparrow	*Zonotrichia*	*leucophrys*
White-throated Swift	*Aeronautes*	*saxatalis*
Yellow Warbler	*Dendroica*	*petechia*
Yellow-breasted Chat	*Icteria*	*virens*
Yellow-rumped Warbler	*Dendroica*	*coronata*

Herpetofauna – 5 species

Figure 56. Tiger salamander.

The landscape of the Pryor Mountains is very dry with few locations for amphibian breeding sites. The herpetofauna team focused searches in some of these areas and did record tiger salamanders in several locations (*Ambystoma tigrinum*) (Figure 56 and 57). No other amphibians were recorded.

Figure 58. Greater short-horned lizards.

Of special interest were several records of greater short-horned lizards (*Phyrnosoma hernandesi*), (Figure 58) some very close to our base camp and sage brush lizards *(Sceloporus graciosus) (Figure 61).* In addition, prairie rattlesnakes (*Crotalus viridis*) and gophernsakes (*Pituophis catenifer*) were recorded.

Figure 57. Herpetofauna team searching one of the few wetland areas for amphibians.

Conclusion

At the conclusion of the 24-hour survey, scientists shared their findings with each other. The exchange of knowledge between professional scientists and the citizen scientists was a rare opportunity that allowed scientists to be recognized for their work and allowed the public to learn directly from the researchers about their interesting finds. It was also an opportunity for scientists to learn from other colleagues in areas of study similar to their own. The energy created at a BioBlitz does much to revitalize everyone's passion for conservation (Figure 58).

Figure 58. Scientists and citizen scientists share their findings at the end of the BioBlitz.

Acknowledgments

Thanks to Dick Walton, Cal Cumin, Barb Pitman, Tim Finger, along with Mike Penfold, and many others for creating the interest to undertake this BioBlitz. Funding was provided by the US Forest Service - Custer National Forest District, the Bureau of Land Management, the Eastern Wildlands Chapter of the Montana Wilderness Association and the Pryors Coalition. Of course a special thanks to each taxonomic team leader responsible for organizing and collating all the data from all the volunteers. The taxonomic experts need a special thank you for sometimes years of work continuing to identify the specimens collected. Finally, a special thank for all the volunteer citizen scientists that took part helping with the surveys as well as logistics.

The main objective for the first Pryor Mountain BioBlitz was to gather a large amount of data in a short period of time and help raise awareness about the important ecology of the Pryor Mountains. The results are limited by the number of trained professional scientists that we had in the field and in labs helping to identify specimens that were collected.

The total species list so far is 812.