

THESIS

THE MAYFLIES (EPHEMEROPTERA), STONEFLIES (PLECOPTERA), AND
CADDISFLIES (TRICHOPTERA) OF THE SOUTH PLATTE RIVER BASIN OF
COLORADO, NEBRASKA, AND WYOMING

Submitted by

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WE HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER OUR SUPERVISION BY BRIAN HEINOLD ENTITLED THE MAYFLIES (EPHEMEROPTERA), STONEFLIES (PLECOPTERA), AND CADDISFLIES (TRICHOPTERA) OF THE SOUTH PLATTE RIVER BASIN OF COLORADO, NEBRASKA, AND WYOMING BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE.

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ABSTRACT OF THESIS

MAYFLIES (EPHEMEROPTERA), STONEFLIES (PLECOPTERA), AND CADDISFLIES (TRICHOPTERA) OF THE SOUTH PLATTE RIVER BASIN, COLORADO, NEBRASKA, AND WYOMING

Nearly 5,000 mayfly (Ephemeroptera), stonefly (Plecoptera), and caddisfly (Trichoptera) (EPT) species records collected from the South Platte River Basin (SPRB) were compiled from literature, field surveys, and institutional and personal collections. From this effort, a total of 291 species (69 mayflies, 66 stoneflies, 156 caddisflies) representing 35 families and 134 genera are reported from 1,208 unique collection locations. The EPT fauna of the foothills transition zone appears to be the most diverse and best characterized physiographic province of the SPRB. Four caddisflies are reported from Colorado for the first time; *Asynarchus circopa* (Ross & Merkley), *Orthotrichia cristata* Morton, *Leptocerus americanus* Banks, and *Helicopsyche* n. sp. The mayflies *Ephemerella compar* (Hagen) and *Ephemerella apopsis* McCafferty are apparently endemic to the South Platte River Basin; however, both species have not been reported since their original collections in 1873 and 1974, respectively. The microcaddisfly *Ochrotrichia susanae* Flint & Herrmann

and the winter stonefly, *Capnia arapahoe* Nelson and Kondratieff are currently under emergency petition in Colorado under the U.S. Endangered Species Act. Many other species were represented by few records and require further investigation to better understand their distributions.

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ABBREVIATIONS

abv = above
A = Adult specimen(s)
Ave = Avenue
SPRB = South Platte River Basin
BLT = Black Light Trap
Brk = Brook
blw = below
Cmpgrd = Campground
Co = County
confl = confluence
CR = County Road
Crk = Creek
Crt = Court
CSU = Colorado State University, Fort Collins, Colorado
CSUC = C.P. Gillette Museum of Arthropod Diversity Colorado State University Collection, Fort Collins, Colorado
CUIC = Cornell University Insect Collection, Ithaca, New York
DERP= personal collection of David E. Ruiter, Centennial, Colorado
DDEH = Denver Department of Environmental Health, Denver, Colorado
DRees = personal collection of David Rees, Fort Collins, Colorado
dwnstrm = downstream
E = East
ELC = Environmental Learning Center, Fort Collins, Colorado
ESUW = University of Wyoming Collection, Laramie, Wyoming
Frk = Fork
FR = Forest Service Road
Hwy = Highway
INHS = Illinois Natural History Survey Insect Collection, Urbana, Illinois
jct = junction
Kjer = Karl Kjer at Rutgers at University, New Brunswick, New Jersey
km = kilometer

L = Larval specimen(s)
m = meters
Malicky = Hans Malicky, Lunz Am See, Austria (data provided by David E. Ruiter)
MCZC= Museum of Comparative Zoology Harvard, Cambridge, Massachusetts
MVL = Mercury Vapor Lamp
Mid = Middle
Mt = Mount
N = North
NF = National Forest
PMNH = Peabody Museum of Natural History Yale University, New Haven, Connecticut
nr = near
PERC = Purdue University Entomological Research Collection, West Lafayette, Indiana
R = River
Rd = Road
Res = Reservoir
RMNP = Rocky Mountain National Park, Colorado
ROME = Royal Ontario Museum, Toronto, Canada
RWBC = Brigham Young University Collection, Provo, Utah
RWHD = personal collection of Robert W. Hood, Denver, Colorado
SEMC = Snow Entomology Museum at the University of Kansas, Lawrence, Kansas
S = South
Strm = Stream
St = Street
SWA = State Wildlife Area
Trib = Tributary
UCEC = University of Colorado Entomology Collection, Boulder, Colorado
upstrm = upstream
USCC = Colorado State University, Pueblo, Colorado
USGSNWQL = U. S. Geological Survey National Water Quality Assessment

Laboratory Collection, Denver, Colorado
USNM = National Museum of Natural History Smithsonian Institution, Washington DC
W = West
WWTP = Waste Water Treatment Plant

INTRODUCTION

Freshwater resources worldwide have been negatively impacted from over appropriation, flow alteration, and toxic inputs due to centuries of human modification (Robarts and Wetzel 2000, Vörösmarty et al. 2000, Wohl 2006, Bates et al. 2008). The declining quality of these aquatic ecosystems is elucidated by documented extirpations and extinctions of aquatic organisms (Stein et al. 2000, Fochetti and Tierno De Figueroa 2006, IUCN 2008). With global human population expected to reach 10.4 billion by the year 2050, there is little doubt that critical freshwater resources and habitat will become increasingly stressed (Bowling and Strzepek 1997, Karr and Chu 1999, Bates et al. 2008). In the United States, major land and water modifications beginning in the early 19th century have contributed to alteration of more than 90 percent of all stream flow, eliminating 66-90 percent of riparian habitat and 70 percent of floodplain forests (Doppelt et al. 1993, Mac et al. 1998, Mac et al. 1998, Jackson et al. 2001). These changes have greatly altered aquatic ecosystems that may have affected aquatic assemblages of native North American aquatic fauna (Kiffney and Clements 1996, Shieh et al. 1999a, b, Zuellig et al. 2002a, Carlisle and Clements 2003, Voelz et al. 2005, Harrold and Guralnick 2007, Alexander et al. 2007).

Freshwater animals are a highly imperiled group of organisms in the United States (Ward 1976 a, b, Ward and Stanford 1982, Ono et al. 1983, Williams et al. 1993, Tate and Heiny 1994, Warren and Burr 1994, McCafferty 1996, Taylor et al. 1996, Young et al. 1996, Nesler et al. 1997, Vinson and

Hawkins 1998, Mac et al. 1998, Helfrich et al. 2003, Fausch et al. 2002, Saunders and Lewis 2003, Peterson et al. 2004, Dodds et al. 2004, Harrold and Guralnick 2007, Cordeiro 1999, Quist and Hubert 2004, Voelz et al. 2005, Wohl 2005). In fact, the documented extinction rates for native North American aquatic fauna is five times greater than for terrestrial animals with 123 documented extinctions of freshwater animal species in the last century (Ricciardi and Rasmussen 1999, Helfrich et al. 2003). Currently in the United States, approximately 69 percent of freshwater mussels, 20 percent of native freshwater fishes, 48 percent of crayfishes, 20 percent of aquatic snails, and 43 percent of stoneflies are either extinct or of special concern (Stein et al. 2000). Additionally, it is estimated that 40 percent of North American frogs, toads, and salamanders are disappearing and pollution and poor water quality continue to impair native mussel populations in Colorado (Helfrich et al. 2003, Harrold and Guralnick 2007). Native fish declines are also reported from the Arkansas River and South Platte River Basins in Colorado since 1980 (Nesler et al. 1997, Nesler et al. 1999).

The extent of biotic impoverishment among freshwater organisms is largely unknown due to the fact that extensive aquatic biological inventories have only recently received attention (Schindler 1989) and the number of documented aquatic insect extinctions probably does not accurately describe their true status of imperilment (Benke 1990, DeWalt et al. 2005). New (1994) pointed out an increase in invertebrate conservation in the Western world. Ward and Short (1978) discussed the importance of understanding aquatic

macroinvertebrate biology to provide data for assessing stream impacts and guiding future stream modification projects. Mayflies, stoneflies, and caddisflies are greatly underrepresented on the IUCN Red List (2008), an international inventory of imperiled organisms, listing only three mayfly, four stonefly, and four caddisfly species at risk worldwide. McCafferty (1996, 2001a) recently reported five species of mayflies extinct in the United States alone. In the SPRB, at least one mayfly is considered extinct and one other mayfly and two stonefly species are possibly extirpated, having not been collected in the basin for more than 70 years. Currently, one caddisfly and one stonefly in the SPRB are on emergency petition for protection under the Endangered Species Act (Mazzacano et al. 2008).

Importance of Aquatic Insects

Aquatic insects are important components in freshwater ecosystems, both by abundance and ecological significance (Brittain 1982, Wiggins 1996, Hynes 1976). Larvae of mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera), hereafter EPT, are often the dominant aquatic macroinvertebrates in freshwater ecosystems. Larvae develop in streams or lakes and are primarily herbivores or detritivores, processing large amounts of particulate organic matter, a major energy source in freshwater ecosystems. Adults are terrestrial, leaving the water primarily for reproduction. Both immature and adult life stages are critical food links in freshwater and riparian ecosystems as food for aquatic and terrestrial organisms such as fish, crayfish, birds, bats, riparian spiders, and other macroinvertebrates (Cummins 1973,

Baumann 1979, Stewart and Stark 2002, Lenat 1993, Wiggins 1996, Ward et al. 2002, Wissinger et al. 2003).

Understanding aquatic insect ecology is also important in measuring stream health. EPT species have been used in the US to monitor water quality since the 1950's for several reasons. They are ubiquitous, display a wide range in sensitivity to pollution and habitat alteration, and have a somewhat predictable response to stressors, making them excellent water quality indicators (Gaufin and Tarzwell 1952, Richardson 1928, Lenat 1993, Hargett et al. 2007). Additionally, identification keys are relatively well developed, quantifiable methods can be used to collect and analyze data, and routine monitoring of aquatic benthic macroinvertebrates can act as a surrogate for more expensive water quality monitoring methods (Richardson 1928, Ward 1975, Vannote et al. 1980, Hilsenhoff 1982, Ward and Stanford 1990, Barbour et al. 1992, Lenat 1993, Lenat and Penrose 1996, Wallace et al. 1996, Wiggins 1996, 2004, Clements et al. 2002, Merritt et al. 2008).

Recent interest in aquatic insects of the SPRB in addition to the large number of specimens housed at the C.P. Gillette Museum of Arthropod Diversity at Colorado State University provided the unique opportunity to document the of EPT species for this project. The main objective of this study was to describe the historical and present day diversity and distribution of the mayflies, stoneflies, and caddisflies of the South Platte River Basin.

STUDY AREA

The SPRB is contained within three states; Colorado, Wyoming, and Nebraska (Figure 1). Approximately 79 percent of the basin is in Colorado and drains a total area of approximately 63,000 km² (Dennehy et al. 1993). The primary river, the South Platte River, originates in Central Colorado near Fairplay and flows 720 km northeast to its confluence with the North Platte River at North Platte, Nebraska. The major perennial tributaries (Clear Creek, St. Vrain Creek, Big Thompson River, and the Cache la Poudre River) originate in the mountains. The major tributaries that originate in the plains (Kiowa Creek, Bijou Creek, Beaver Creek, and Lodgepole Creek) are ephemeral and contribute relatively little to the stream flow. Dennehy et al. (1993) provided detailed information on the environmental setting of the SPRB and therefore is only briefly discussed herein.

Physiographic Provinces

The SPRB is encompassed within two major physiographic provinces, the Southern Rocky Mountain and the western Great Plains. The Southern Rocky Mountains form the western periphery of the SPRB where high elevation, perennial headwater streams originate near the continental divide at elevations up to 4,000 m. The mountain environments above 3,300 m are characterized by steep gradients, low mean annual temperatures, high precipitation, permanent snow and ice fields, exposed rock, alpine meadows, and sedges in wet areas. Mid-elevation and subalpine zones, from approximately 2,500 to 3,300 m, contain mostly coniferous forest (Chapman et

al. 2006). Land use includes wildlife habitat, livestock grazing, mining, logging and recreation (Wohl 2000).

From approximately 1,500 to 2,500, m in elevation lies a region broadly known as the foothills transition zone (Figure 2). This region includes the lower foothills and upper elevations of the plains where streams transition from cold to warm stream habitat. Sagebrush, grasslands, shrub land, and scattered oak shrub are the primary vegetation types (Chapman et al. 2004). Land use of the foothills includes urban development, recreation, and wildlife habitat (Wohl 2000).

The western Great Plains physiographic province covers the eastern portion of the SPRB from the foothills to the lowest elevation of the basin at 865 m. This region is characterized by smooth to irregular plains, occasional bluffs, small canyons, and rolling hills. Vegetation is mostly short grass prairies, shrub land, and native cottonwood trees (e.g., *Populus deltoides*) (Weaver 1968, CDPHE 2007, Chapman et al. 2001, 2006). The fertile soil on the plains is largely devoted to agriculture and livestock grazing.

Land Use

Land use on the plains of the SPRB is dominated by rangeland and agriculture, at 41 and 37 percent, respectively (Dennehy 1993). Irrigated agriculture comprises only 8 percent of the basin land cover but accounts for 71 percent of the water use (Dennehy et al. 1993) (Figure 3). Urban areas, concentrated along the foothills transition zone cover 3 percent of the land but account for 12 percent of water use. National Forests, mostly in the foothills

and mountains, cover 16 percent of the SPRB and protected natural areas account for 3 percent of land cover (Dennehy et al. 1993).

Climate

Seasonal winds of the mountains combined with the semi-arid western Great Plains result in a cool dry climate with irregular seasonal and annual precipitation and temperature changes (Gaggiani et al. 1987, Dennehy et al. 1993, Doesken et al. 2003). The plains receive approximately 35.5 cm of precipitation annually, mostly from rainfall between April and September. The mountains receive 101.6 cm annually, mostly from snowfall during the winter, including snowfall in excess of 762 cm. Temperatures generally increase from west to east with monthly averages from 1.5°C in January in the mountains to 29°C in July on the plains (CWRRRI 1987, Dennehy et al. 1993).

Natural Hydrology

Perennial flows of the South Platte River and its major tributaries originate along the eastern slope of the Southern Rocky Mountains, often above 4,000 m in elevation. These mountain headwater streams account for approximately 70 percent of annual basin flows and originate from snow melt primarily in spring and early summer. Mountain streams are characterized as cold, high gradient, with high dissolved oxygen concentrations, coarse substrates, coarse particulate organic matter, and are relatively undisturbed (Jarrett 1990). As these streams decrease in elevation and flow through the foothills they are characterized as cool, slower, wider, with lower gradients,

finer substrates and finer particulate organic matter (Fausch and Bestgen 1997). During dry times these streams are recharged by groundwater.

Harsh conditions exist in streams originating on the plains. They experience highly variable flows from flash floods during rain showers in spring and early summer to completely drying up in late summer (Matthews 1988, Fausch and Bestgen 1997, Scheurer et al. 2003, Dodds et al. 2004). They typically only flow during and immediately after rain showers as annual precipitation is insufficient for aquifers to maintain continual surface flows (Dennehy et al. 1993). Historically, the lower South Platte River on the plains was a broad, highly braided, shallow sand bottom channel with an extensive floodplain that dried out in several reaches (Mead 1896, Wohl 2005).

Anthropogenic Disturbance

The SPRB has experienced extensive land and water development since the middle 1800's (Eschner et al. 1983, Dennehy et al. 1993); altering physical structure, chemistry, and hydrology of streams (Strange et al. 1999, Wohl 2001, Voelz et al. 2005, Sprague et al. 2006). These disturbances may lead to decreased feeding, mating, and overall function of aquatic life (Ward 1976a, Shieh et al. 2002, 2003, Carlisle and Clements 2003, Alexander et al. 2007). Few, if any streams in the basin, particularly those on the plains remain unaltered.

Early Disturbance and Mining

Perhaps the earliest impacts to the mountains and foothills-transition zone streams were near extirpation of beavers and removal of beaver dams, railroad tie drives, mining, and logging which increased water velocity, sediment load, altered channel structure, and deposited toxic chemicals into the water (Farmer 1883, Wroten 1956, Rhodes 1990, Wohl 2000, Zuellig 2001, Clements 2004, Zuellig et al. 2007).

Mining is a dominant stressor among western United States streams ecosystems (Carlisle and Clements 2003). An area referred to as the Mineralized Zone of Colorado is currently and was historically heavily mined and contains parts of Boulder, Gilpin, Clear Creek, and Park Counties and harbors head waters of the South Platte River and several major tributaries (Kosnar and Miller 1976). Acid mine leakage and heavy metal releases from mining for gold, silver, copper, and other minerals beginning in about 1859, were dominant biotic stressors among western United States streams that impacted local and downstream aquatic life (Nelson and Roline 1993, Knight 1994, Neely et al. 2001, Carlisle and Clements 2003). Placer and gravel mining completely changed physical stream structures and removed riparian vegetation while historic peat mining in South Park impacted rare fens (Sanderson and March 1996, Wohl 2001). Increased population, agriculture, roads, and logging associated with mining further impaired streams and likely disrupted larger scale ecosystem processes (Neely et al. 2001). Current mining in the basin extracts molybdenum, uranium, limestone and other minerals

(CMA 2008). Mining in Colorado, particularly on the plains, is expected to increase and lead to more permanent and severe impacts of water quality (Ward 1976a, Carlisle and Clements 2003, Wohl 2001, 2005).

Urbanization

Population explosions occurred when gold was found at the South Platte River and Cherry Creek in Denver in 1859, starting the Colorado Gold Rush (Mead 1896). Small mining camps near Fairplay and Idaho Springs housed thousands of miners and population in the SPRB has steadily grown since then. Nearly 3 million people (95 percent of the SPRB population) currently live in a highly urbanized area from Denver to Fort Collins referred to as the Front Range Urban Corridor (Figure 2) that coincides with the foothills transition zone. Projections of nearly 6 million people will live here by the year 2030 (US Census Bureau 2006). Urbanized areas have had disproportionately negative effects on stream water quality along the Front Range from storm water runoff, industrial chemicals, paving of land, water development, and flood control (Richardson 1928, Nesler et al. 1997, Ward 1998, Shieh et al. 2003, Yang and Carlson 2003, Voelz and McArthur 2000, Voelz et al. 2005, Tate and Heiny 1994, CDPHE 2007).

Agriculture

Irrigated agriculture and livestock grazing were introduced to the basin to support the growing human population, requiring extensive water and land development. Converting natural grassland to crop fields and rangeland caused

widespread water quality degradation (Buffington and Herbel 1965, Potter et al. 1983, Wohl 2000, 2005).

Simple hand dug ditches on the plains beginning in the 1860's were followed by upstream diversions, dams, and reservoirs to store and deliver water to crops (Eschner et al. 1983). By the year 1880, natural water resources in the SPRB were considered over appropriated (Strange et al. 1999) and few, if any streams in the area were unimpacted from irrigated agriculture practices (Mead 1896, Kryloff 2007). To meet the increasing water demands of irrigated agriculture, large-scale transmountain water diversions, such as the Colorado-Big Thompson Project, were built to import water into the basin mostly from the Western Slope of Colorado (BOR 2008). Fifteen major transmountain diversions now import approximately 20 percent of the water used in the SPRB to augment streams and fill reservoirs along the Front Range of Colorado for municipal and agricultural use with large future water storage projects proposed (Strange et al. 1999, BLM 2001, CWCB 2002, CWRRI 2007, CDPHE 2007, BOR 2008, NCWCD 2008). Such projects have potential for ecological impacts including introduction of nonindigenous organisms, change in hydrologic regimes, temperature, water quality, and alteration of habitat (Davies et al. 1992, Meador 1992, Wohl and Rathburn 2003). Additionally, residual agricultural fertilizers and pesticides can be found in surface and ground water including high elevation lakes further impacting water quality (Kimbrough and Litke 1996, Shieh et al. 2003, Sprague and Greve 2003, Mast et al. 2007).

Livestock Grazing

Many watersheds of the western plains not used for irrigated agriculture are maintained for livestock grazing which is also present throughout much of the SPRB (Dodds et al. 2004, Gary et al. 1983). Land damage from livestock overgrazing was recognized nearly 100 years ago by the federal government and the Taylor act of 1934 was established to "...stop injury to the public grazing lands [excluding Alaska] by preventing overgrazing..." (BLM 2008). Much of Colorado has experienced similar water quality issues due to grazing as other regions in the semi-arid west (Johnson et al. 1978, Gary et al. 1983). Belsky et al. (1999) discuss impacts of poor livestock grazing in practices the western US from many peer reviewed articles. They generalize that approximately 80% of stream and riparian ecosystems in the west have been damaged by livestock grazing over the past 200 years. Furthermore, grazing in and near streams causes compaction of stream bed, bank instability, erosion, increased water temperature, increased organic input, and loss of riparian vegetation (Kauffman and Krueger 1984, Sedgwick and Knopf 1991, Fleischner 1994, Herbst and Knapp 1999, Tate et al. 2005). Documented loss of stream habitat, aquatic wildlife, and degraded water quality still continue at local and regional levels attributed to poor grazing practices (Platts 1981, Belsky et al. 1999). The SPRB has likely experienced similar impacts from livestock overgrazing.

Current Hydrology

Little stream data were collected prior to extensive water development that was well established by the year 1900, making it impossible to understand the natural state and extent of alteration to stream hydrology (Baron et al. 1998, Strange et al. 1999, Wohl 2001, Jackson et al. 2001, Zuellig et al. 2007). Current hydrology in the SPRB resembles a highly modified, controlled plumbing system that serves as water storage and distribution for human use. No major streams in the basin maintain natural flow regimes as most are regulated by water retention structures and associated irrigation canal networks (Schumm et al. 1984, Silkensen 1992, Dennehy et al. 1993, 1998, Strange et al. 1999, Zuellig 2001, Wohl 2001, Saunders and Lewis 2003, Sprague et al. 2006, Zuellig et al. 2007). Historic land use coupled with increasing water demand suggests that restoring these streams to natural condition is no longer an option. With that in mind, future water managers must consider conservation of aquatic fauna that perform essential ecosystem services, such as nutrient cycling, in developing sustainable water use practices (Strange et al. 1999).

Synopsis of Previous EPT Collections in the SPRB

The earliest EPT collections in the SPRB were made during the Hayden survey of Colorado by the US Geological Survey in the early 1870's. This expedition provided a few rare species records. For example, the burrowing mayfly *Ephemera compar* (Hagen) has not been recollected since the original type material from 1875. Only a few species records were available prior to the year 1900. It was not until 50 years later that Dodds (1923) published the first

systematic study of aquatic insects in the basin. He surveyed the mayflies in the upper reaches of Boulder Creek describing 15 species. Besides these studies, few early species records were available for this study and limited collections were made prior to the Clean Water Act of 1972. Other rarely collected species that have not been reported in at least 60 years include the mayflies *Macdunnoa persimplex* (McDunnough), *Ephemerella apopsis* McCafferty, and *Maccaffertium mexicanum integrum* (McDunnough) and the stoneflies *Taenionema pacifica* (Banks), *Isogenoides elongatus* (Hagen), and *Isoperla bilineata* (Say).

More recent publications compiled historic records and contributed important ecological data from local, state, and ecological studies (Elgmork and Saether 1970, Stark et al. 1973a, b, Ward 1975, 1976a, b, 1982, 1986, Baumann et al. 1977, Ward and Berner 1980, Herrmann et al. 1986, Ward and Stanford 1990, McCafferty et al. 1993, 1994, Grotheer et al. 1994, Durfee and Kondratieff 1994a, b, 1995, Zuellig 2001, McCafferty 2001 a,b, 2008, Ward et al. 2002, Kondratieff and Baumann 2002, Schneider 2003, Stark and Baumann 2004, USGS 2006a, b, Zuellig et al. 2002 b, Zuellig et al. 2007). This study includes nearly 5,000 species records, 300 of which are from recent field surveys, from more than 1,200 unique collection locations in the SPRB (Figure 4).

EPT species richness is relatively low compared to other regions of North America such as the southern Appalachians and Pacific Northwest (Jewett 1959, Anderson 1976, Stein et al. 2000, DeWalt and Heinold 2005,

Morse et al. 1993, Meyer and McCafferty 2007). Although aquatic habitat diversity is rich in the SPRB, the relatively young geologic age and recent high elevation glaciations may naturally limit aquatic biodiversity (Vinson and Hawkins 1998, Menounos and Reasoner 1997).

Ephemeroptera (Mayflies)

Mayflies are a small, primitive order of aquatic insects with approximately 2,000 species known worldwide and 631 in North America (McCafferty 2008). Most larvae develop in streams, some in lakes, and adults are terrestrial. They undergo incomplete metamorphosis and in temperate regions typically display a one year life cycle with most species emerging spring through late summer. Most larvae are herbivores and few are predators. Adults have reduced mouth parts and rarely feed (Brittain 1982). Mayflies have two adult life stages that are winged, the subimago and the imago, or subadult and adult. Both stages are short lived typically from a couple hours to two days depending on species. The subimago emerges from the mature larva and drifts to the air-water interface via hydrofuge hairs. Often within minutes, it flies to nearby terrestrial habitat to undergo one additional molt to reach the final reproductive adult stage, the imago (Brittain 1982). In certain species, thousands of adult male mayflies can be seen in nuptial swarms above or near streams or lakes during mating. Mated females return to the water to oviposit. Brittain (1982) provides a detailed review of mayfly biology. The first documented mayfly collection in the SPRB occurred in 1915 (INHS database at http://ctap.inhs.uiuc.edu/Insect/search_inhs.asp).

Mayflies of Colorado are well documented with 102 confirmed species in the state (McCafferty et al. 1993, Durfee and Kondratieff 1994, Myers and Younghanz 2007). They are relatively well characterized in the accessible mountain and foothill sections but are less known in the more remote mountains and plains sections (McCafferty et al. 1993). Dodds (1923) conducted the first systematic study of aquatic insects, the mayflies, in Colorado. At that time twenty-two species were originally described from this work (Edmunds 1962). Many taxonomic and ecological studies produced species records of mayflies for Colorado (Dodds and Hisaw 1925, Argyle and Edmunds 1962, Elgmork and Saether 1970, Allan 1975, Ward 1975, 1976a, 1976b, 1986, Ward and Berner 1980, Bednarik and Edmunds 1980, Rader and Ward 1987a, 1987b, 1989, Flecker and Allan 1988, Allan and Flecker 1989, Ward and Stanford 1990, DeWalt et al. 1994, Durfee and Kondratieff 1997, Randolph 2002, Finn and Poff 2005).

Mayflies of Nebraska are presented by McCafferty et al. (2001) who listed 81 species. Nebraska is viewed as an east-west and north-south geographical range limit for many mayflies. Most species in the state are typical for the Midwestern US occurring in slow, sandy, warm water streams and lakes (McCafferty et al. 2001). Other published reports of mayflies included species records with associated data (Traver 1935, Spieth 1941, Hamilton 1952, 1959, Swanson 1967, Bednarik and McCafferty 1979, Kondratieff and Voshell 1984, Moul 1984, Pescador 1985, Provonsha and McCafferty 1985, McCafferty and

Waltz 1986, Darrow and Pruess 1989, Provonsha 1990, Harris et al. 1999, Klubertanz and Jones 1999, Wiersema and McCafferty 2000).

The mayflies of Wyoming are less known and are limited to small regional and ecological studies of the state (Armitage 1961, Kroger 1970, Duffield and Nelson 1998, Pennuto et al. 1998, Zuellig et al. 2002a, USGS 2006, Wu and Legg 2007). Further studies in Wyoming will undoubtedly yield more species, given the diverse habitat over its large and diverse landscape. However, the Wyoming portion of the SPRB is limited to few permanent streams with extensive livestock grazing, providing little suitable habitat.

Plecoptera (Stoneflies)

Stoneflies are primitive and a relatively small order of aquatic insects with approximately 2,000 species known worldwide and 662 species known from North America (Kondratieff and Baumann 2002, Stark et al. 2008). Stoneflies are more restricted to running water (lotic) habitats than any other order of aquatic insects with their highest diversity in cold, clean mountain streams with high dissolved oxygen concentrations and coarse substrate; a few species occupy rocky, windswept shores of lakes (Needham and Claassen 1925, Hynes 1976, Baumann 1979). Their lack of mobility prevents stoneflies from crossing even small geographic barriers so distribution appears to be well understood (Illies 1971). Temperature and food are major controlling factors of stonefly distribution (Short and Ward 1980, Ward and Stanford 1982). Stoneflies undergo incomplete metamorphosis and most species in temperate regions have a one year life cycle, however some species such as *Pteronarcys*

californica have a multi-year life cycle (DeWalt and Stewart 1995). They typically emerge at night in spring or summer with the highest emergence periods near the summer solstice with the exception of winter stoneflies, which can emerge throughout the coldest months (Radford and Hartland-Rowe 1971, Daan and Gustafsson 1973, Hitchcock 1974, Hynes 1976, DeWalt et al. 1994). Most species are herbivorous as larvae, feeding on plant detritus while three North American families are predominantly predators; many adult species do not feed (Hynes 1976, Stewart and Stark 2002). Stonefly larvae are intolerant to physical habitat alteration, siltation, and organic pollution so their presence is usually indicative of good water quality (Lenat 1993, Lenat and Penrose 1996, Baumann 1979, Favret and DeWalt 2002). Because stoneflies are ecologically restricted, their faunal affinities are somewhat predictable. For example, Nelson (2008) found that stonefly assemblages of the mountains and foothills of Colorado and Wyoming were similar and more typical of montane western North America while the fauna of Nebraska and the eastern portions of Colorado and Wyoming were more typical of central and eastern North America.

Stoneflies of Colorado are relatively well documented. In addition to the earliest stonefly records from Colorado by Hagen (1875) and Dodds and Hisaw (1925), more recent publications provided detailed species accounts from the state (Gaufin 1964, Nebeker and Gaufin 1965, 1967, Knight and Gaufin 1966, 1967, Oblad 1969, Baumann and Gaufin 1970, 1972, Stark et al. 1973a, b, Baumann et al. 1977, Szczytko and Stewart 1979, Ward 1986, DeWalt et al.

1994, DeWalt and Stewart 1995, Zuellig 2001, Kondratieff and Baumann 2002, Ward et al. 2002, Zuellig et al. 2006, Stark and Baumann 2004).

Stoneflies of Nebraska are not summarized on any single list. Records were extracted from available ecological and regional studies (Harris et al. 1991, Rhodes and Kondratieff 1996, USGS 2006*b*).

Stoneflies of Wyoming are not well documented. Regional, ecological, and taxonomic studies as well as studies from adjacent states provided stonefly records from Wyoming (Hanson 1943, Armitage 1961, Kroger 1970, 1974, Baumann et al. 1977, Zenger and Baumann 2004, Stark and Baumann 2004, Baumann and Kondratieff 2008).

Trichoptera (Caddisflies)

The caddisflies comprise a large order of aquatic insects with approximately 13,000 known worldwide and 1,400 species in North America (Mackay and Wiggins 1979, Wiggins 1996, 2004, Morse 1997). Caddisflies are an advanced group of aquatic insects with remarkable diversity credited to the larval ability to spin silk for making cases, retreats, or nets that mostly facilitate respiration and feeding efficiency allowing them to exploit a very wide range of habitat (Milne 1938, Mackay and Wiggins 1979, Wiggins 1996, 2004, Wissinger 2003, de Moor and Ivanov 2008). Larvae undergo complete metamorphosis and most species in temperate regions have a one year life cycle with adults of most species emerging in spring or summer. Most larvae are herbivores, scrapers, or collectors and a few are predators. Adults are moth like insects and can feed on liquid such as nectar (Wiggins 1996).

Caddisflies of Colorado are well characterized with approximately 200 species known from the state. Herrmann et al. (1986) provided the first statewide inventory of caddisfly species in Colorado, listing 176 species. Other studies have documented distributional information from ecological investigations made at local and regional scales (Denning 1948, Short and Ward 1980, Herrmann 1982, Denning 1983, Voelz and Ward 1996, Ruiter 1990, 1999, Myers and Younghanz 2007).

Caddisflies of Nebraska are mostly compiled from ecological, regional, and taxonomic studies, as no single comprehensive list is available for the state (Flint 1984, Harris et al. 1991, Whiles et al. 1999).

Caddisflies of Wyoming were documented by Ruiter and Lavigne (1985), listing 181 species. They also provided a historical review of caddisfly literature from the state. Few recently published species records are available for Wyoming (Armitage 1961, Kroger 1970, 1974, Denning 1948, 1983, Pennuto et al. 1998, Ruiter 1999, Zuellig et al. 2002a).

METHODS

Data for this study were compiled from peer-reviewed literature, university and personal collections, documents produced by consulting firms working with various cooperators (mostly municipalities), and recent field surveys. Records were accepted only when species level identification was determined. Some records lacked depository information because they were either from dismantled personal collections where material was stored in various locations, depository information was not provided, or the material was

destroyed after sample processing. In most cases, unconfirmed historical species occurrences were not included because the identifications could not be verified. When possible, specimens from historic collections were examined to confirm identifications.

Field surveys were conducted from August 2006 to February 2010 and were focused in portions of the basin where EPT distributional information was scarce and on several uncommonly reported taxa. Larval specimens were collected by hand picking from benthic substrates (Merritt et al. 2008) and using a D-frame kick net (1-millimeter mesh) from unique habitat types (e.g., undercut banks, riffle, run, pool, leaf pack, woody debris). The contents of the net were placed into a white plastic pan and sorted in the field. A series of each taxon was removed from the pan and preserved in 70 percent ethanol. Additionally, species identification of many aquatic insects is possible only with adult male forms; therefore, mature mayfly and stonefly larvae and pupating caddisflies were placed in an aerated bucket with water from the respective habitat and transported to a laboratory at Colorado State University, Fort Collins and reared to adults. Cast larval skins from mayflies and stoneflies reared in the laboratory were collected to help associate the immature stages with adult forms. All specimens reared in the laboratory were preserved in 70 percent ethanol and identified to the lowest possible taxonomic resolution. Adult specimens were collected using beating sheets, sweep nets, aerial nets, ultra-violet black light traps, and hand picking individuals from exposed substrate or riparian vegetation. A series of each taxon was preserved in 70 percent ethanol. Mayfly

subadults (subimagos) were kept alive in 250 milliliter plastic containers with 1 millimeter mesh screens and stored in a soft cooler until their final molt to adulthood (imago), then preserved in 70 percent ethanol. Specific identification of some stonefly groups requires the use of developed eggs and extruded male genitalia (aedeagus); therefore, adult male stoneflies in genera such as *Isoperla* and *Suwallia* collected in the field were kept alive until further processing in the laboratory. All specimens were transported to Colorado State University for further sorting and identification. Specimens ultimately were deposited in the C.P. Gillette Museum of Arthropod Diversity at Colorado State University with the exception of some caddisflies retained by David E. Ruiter (Centennial, Colorado).

Each species account and associated data was stored in a relational Access Database, Microsoft ® Corporation 2000. The latitude and longitude of each unique collection location was determined using a personal global positioning unit in the field or by using the personal computer program Map Tech ®, 2001, Andover, MA. Geographic coordinate data was collected in decimal degrees using North American Datum 1983 (NAD 83) geodetic datum. Cartographic displays of each species distribution were produced using Environmental Research Institute's ArcGIS® 9.2 software. Many record labels had vague locality information which made it impossible to assign exact X Y coordinates and elevation. In this case latitude, longitude and elevation information was generalized and coded in the database as "General". When exact locations were known they were coded as "Specific".

RESULTS

Species records and remarks

There were a total of 291 EPT species reported from the SRPB comprised of 69 mayfly, 66 stonefly, and 156 caddisfly species from nearly 5,000 records. From 1,208 unique collection locations, approximately 11 percent of the records were from the plains, 61 percent from the foothills, and 28 percent from the mountains, making the foothills transition zone the best characterized physiographic province in the basin. The data reported in this section are organized first by order, mayflies (Ephemeroptera), stoneflies (Plecoptera), then caddisflies (Trichoptera), then alphabetically by family, genus, and species. Associated collection data are provided in order by state, county, habitat (i.e., body of water on the data label *in italics*), location, elevation in meters, date(s) collected, life stage, and the depository where the specimens were housed at the time of this study. In some cases the information on the label was slightly modified in the records section for clarity. For example, the same stream was sometimes reported by different collectors using various spellings such as 4 mile Creek, Four Mile Creek, or Fourmile Creek - in this case the stream name was standardized to 4 Mile Creek. If a species was collected from the same site on more than two dates, only the first and last collection dates were listed. This may present an apparent discrepancy in the number of records provided in the tables and may not list each month that adults specimens were present for some species. Brief remarks were provided immediately after each species collection records. Elevational

distribution and species adult presence by month were summarized in tables at the end of the document. In order to save space, several abbreviations were used which are defined in the previous section entitled ABBREVIATIONS (page xxiv).

This research highlighted 91 EPT species that require further investigation to better understand their status and distribution within the SPRB (Table 11). These species were either new state or SPRB records, undescribed, represented by typically less than four records, or appeared to have limited distributions in the SPRB. They are highlighted by * in the records section and footnotes in the tables section. Some uncommonly reported species are not included in Table 11. For example, *Pteronarcys pictetii* has a limited known range in the SPRB, but is not listed in Table 11 as it displays a more eastern United States distribution and would logically be restricted to the South Platte River in the far eastern portion of the basin on the plains which was adequately sampled during this study.

EPHEMEROPTERA

Ameletidae (Minnow Mayflies)

**Ameletus celer* McDunnough 1934

Appendix A, page A2

Records: COLORADO, **Boulder Co**, *4 Mile Crk*, nr Hwy 72, 2793 m, 28-VII-1998, L, CSUC; **Larimer Co**, VII to VIII, A, (Zloty 1996).

Remarks: These are the only SPRB records available for this more northwestern species (Zloty 1996). Zloty (1996) reported adults of this species in Larimer County June through August but provided no additional data.

Specimens were collected at 2793 meters in elevation.

Ameletus doddsianus Zloty 1996

Appendix A, page A2

Records: COLORADO, **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2780 m, 7-VII-1990, L, CSUC; **Larimer Co**, *Big Thompson R*, RMNP, 1424 m, 24-IX-1993, A, CSUC; Hwy 34 nr Drake, 1875 m, 8-VII-1998, A, CSUC; *Buckhorn Crk*, Roosevelt NF N of jct Stove Prairie Rd, 2012 m, 17-IX-1998, A, CSUC; *Cache la Poudre R*, at Upper Picnic Rock Access 5.6 km W of Hwy 287, 1602 m, 8-V-1993, A, CSUC; Hwy 14 11 km W of Hwy 287, 1633 m, 18-V-1995, A, CSUC; *Icy Brk*, abv The Loch RMNP, 3104 m, 16-VIII-1988, A, CSUC; *Skin Gulch*, at Stove Prairie Rd, 1892 m, 8-V-1993, A, CSUC.

Remarks: Paratypes of this species were collected from Skin Gulch, a tributary of the Cache la Poudre River in Larimer County, and South Boulder Creek in Gilpin County, Colorado. This species is also known from Arizona, New Mexico, Nevada, and Utah (Zloty 1996). Specimens were collected between 1424 m and 3104 m in elevation. Adults were present May to September.

Ameletus sparsatus McDunnough 1931

Appendix A, page A3

Records: COLORADO, **Boulder Co**, S Saint Vrain Crk, abv Lyons, 1664 m, 18-II-1945, INHS; **Gilpin Co**, at Tolland, 2704 m, (no more data); **Larimer Co**, Big Thompson R, at Hwy 34 and CR 43, 1878 m, 23-VI-1998, A, CSUC; Hwy 34 at Drake, 1878 m, 8-VII-1998, A, CSUC; Cache la Poudre R, Hwy 14 11 km W of Hwy 287, 1633 m, 18-V-1995, A, CSUC; N Poudre Supply Canal, Hwy 287 N at Hwy 14, 1509 m, 17-VI-1996, A, CSUC; Sheep Crk, Upper Cherokee Park, 2223 m, 15-VII-1991, A, CSUC.

Remarks: Some previous records from the SPRB for this species were recognized as *A. aequivocus* (McCafferty et al. 1993). *Ameletus sparsatus* was collected at elevations between 1633 m and 2223 m. Adults were present between May and July.

Ameletus subnotatus Eaton 1885

Appendix A, page A3

Records: COLORADO, **Larimer Co**, Cache la Poudre R, Martinez Park Fort Collins upstream of College Ave, 1513 m, 11-IV-1998, A, CSUC; upper Picnic

Rock access 5.6 km W of Hwy 287, 1602 m, 18-IV-1993, A, CSUC; Indian Meadows access Hwy 14, 2141 m, 11-V-1998, A, CSUC; 10-IV-2007, A, CSUC; State Fish Hatchery Hwy 14, 2317 m, 10-IV-2007, A, CSUC.

Remarks: Larval exuviae of this *Ameletus* species are often found in abundance clinging to exposed surfaces along edges of the middle and low reaches of the Cache la Poudre River in early spring. Dodds (1923) reports “a few specimens have been found in South Boulder Valley [Colorado], exact locality unknown”. Zloty (1996) did not include the Boulder County records above in his revision of Nearctic *Ameletus* so the status of *A. subnotatus* in Boulder County is not verified. Adults were collected in April and May at elevations between 1513 m and 2317 m. This species is probably more widespread than records indicate.

Ameletus validus McDunnough 1923

Appendix A, page A4

Records: COLORADO, **Boulder Co**, *S Boulder Crk*, Mesa Trailhead, 1760 m, 3-X-1995, A, CSUC; **Larimer Co**, *Buckhorn Crk*, 33.7 km N of Masonville, 2067 m, 12-IX-1986, L, CSUC; 35.2 km NW of Fort Collins, 2566 m, 2-X-1986, A, CSUC; *S Frk Cache la Poudre R*, 100 m blw confl with Little Beaver Crk, 2650 m, 19-XI-2004, A, CSUC.

Remarks: Records for this more northern and western North American species (Zloty 1996) are from small streams of the Foothills of the Colorado portion of

the SPRB. Adults of this fall emerging species were collected in October and November at elevations between 1760 m and 2650 m.

Ameletus velox Dodds 1923

Appendix A, page A4

Records: COLORADO, **Boulder Co**, Boulder, 1631 m, 24-VII-1939, INHS; 4 Mile Crk, nr Hwy 72, 2809 m, 8-VII-1998, A, CSUC; **Gilpin Co**, S Boulder Crk, Rollinsville Hwy 119, 2562 m, 2-VII-1995, A, CSUC; 8 km W of Tolland, 2779 m, 7-VII-1991, A, CSUC; at Tolland, 2704 m, 2704 m, A, VII-1915, INHS.

Remarks: One of several species of mayflies described by Dodds (1923) in his study of upper South Boulder Creek in Boulder and Gilpin Counties. All SPRB records of this species are from the Boulder Creek basin in Colorado.

Specimens were collected from 1631 m to 2809 m in elevation. Adults were present from June to July.

Baetidae (Small Minnow Mayflies)

Acentrella insignificans (McDunnough) 1926

Appendix A, page A5

Records: Colorado, **Adams Co**, Big Dry Crk, 120th Ave, 1584 m, 8-X-1997, L, CSUC; Little Dry Crk, blw Lowell St near Westminster, 1600 m, 25-VI-2003, L, USGSNWQL; Sand Crk, 200 m dwnstrm from Quebec St Denver, 1588 m, 8-X-2000, L, CSUC; Peoria St Denver, 1615 m, 27-VIII-1993, L, USGSNWQL; S Platte R, at Henderson, 1525 m, 7-IX-1995, L, USGSNWQL; **Boulder Co**, Bear

Crk, abv Wellman Feeder Canal at Boulder, 1606 m, 26-VI-2003, L,
 USGSNWQL; *Boulder Crk*, at 55th St in Boulder, 1583 m, 1-X-1999, L, 22-IX-
 1998, L; at 28th St in Boulder, 1613 m, 26-IX-1996, L; 22-IX-1998, L; at
 Broadway Ave in Boulder, 1630 m, 1-X-1999, L; 22-IX-1998, L; at Canyon
 mouth in Boulder, 1656 m, 29-IX-1993, L; 1-X-1999, L; blw 61st St nr Boulder,
 1569 m, 11-VII-2003, L, USGSNWQL; *S Boulder Crk*, Lafayette, 1614 m, 13-X-
 1995, L, CSUC; at Baseline Rd near Boulder, 1612 m, 30-VI-2003, L,
 USGSNWQL; *Dry Crk*, abv Baseline Rd nr Boulder, 1606 m, 30-VI-2003, L,
 USGSNWQL; *Left Hand Crk*, abv Pike Rd at Longmont, 1514 m, 7-VII-2003, L,
 USGSNWQL; nr confl Saint Vrain Crk, 1530 m, 26-IX-2007, L, CSUC; *Saint*
Vrain Crk, 85th and 9th Streets in Longmont, 1530 m, 26-IX-2007, L, DRees
Denver Co, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL;
Cherry Crk, Denver, 1579 m, 18-VII-2002, L, USGSNWQL; Lincoln Ave nr
 pedestrian bridge Denver, 1759 m, 31-VIII-1999, L, DDEH; Corona St Denver,
 1608 m, 18-V-1993, L, DDEH; Grant St Denver, 1615 m, 9-IX-1997, L, DDEH;
 Havana St Denver, 1668 m, 2-IX-1999, L, DDEH; Colorado Blvd dwnstrm of
 Glendale WWTP, 1626 m, 1-IX-1999, L, DDEH; upstrm Downing St Denver,
 1608 m, 8-IX-1997, L, DDEH; *Sanderson Gulch*, abv Lowell Ave at Denver,
 1633 m, 24-VI-2003, L, USGSNWQL; *S Platte R*, Denver, 1577 m, 26-VII-1993,
 L, USGSNWQL; 9-IX-1998, L, USGSNWQL; **Douglas Co**, *Cherry Crk*,
 Castlewood Canyon State Park, 1994 m, 10-XI-1996, L, CSUC; *Plum Crk*, nr,
 Sedalia, 1682 m, 17-IX-1993, L, USGSNWQL; **Jefferson Co**, *Bear Crk*, blw
 Estes Rd at Lakewood, 1645 m, 23-VI-2003, L, USGSNWQL; *Big Dry Crk*, blw

Hyland Creek at Westminster, 1609 m, 2-VII-2003, L, USGSNWQ; *Clear Crk*, blw Kipling St at Wheat Ridge, 1630 m, 21-VII-2003, L, USGSNWQL; at Golden, 1577 m, 24-VIII-1993, L, USGSNWQL; *Ralston Crk*, abv Simms at Arvada, 1655 m, 25-VI-2003, L, USGSNWQL; **Larimer Co**, *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; at Loveland, 1497 m, 16-IX-1993, L, USGSNWQL; blw Moraine Park nr Estes Park, 2439 m, 13-IX-1995, 17-VII-2002, L, USGSNWQL; *Buckhorn Crk*, CR 23, 1550 m, 13-V-2001, L; *Cache la Poudre R*, Horsetooth Rd, 1473 m, 20-VII-1996, A, CSUC; abv Box Elder Crk nr Timnath, 1481 m, 22-IX-1993, L, USGSNWQL; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; at mouth of Cache la Poudre Canyon nr Fort Collins, 1594 m, 26-VIII-1993; 13-IX-1995, L, USGSNWQL; *Fossil Crk*, just blw Lemay St at S Ridge Golf Course in Fort Collins, 1491 m, 10-VII-2000, A, CSUC; *Spring Crk*, Fort Collins, 1662 m, 27-V-1986, A, CSUC; Edora Park in Fort Collins, 1499 m, 7-VII-2003, L, USGSNWQL; *Mail Crk*, nr mouth at Fort Collins, 1493 m, 8-VII-2003, L, USGSNWQL; **Morgan Co**, *S Platte R*, at Cooper Bridge nr Balzac, 1261 m, 27-VII-1993; 11-IX-1995, L, USGSNWQL; **Weld Co**, *S Platte R*, nr Kersey, 1394 m, 21-VII-1994, L, USGSNWQL; 15-VII-2002, L, USGSNWQL; nr La Salle, 1408 m, 2-IX-1993, L, USGSNWQL; *Saint Vrain Crk*, mouth nr Platteville, 1445 m, 25-VIII-1993; 7-IX-1995, L, USGSNWQL; bridge at CR 119, 1450 m, 29-VI-2008, A, CSUC; **Sedgwick Co**, *S Platte R*, Julesburg SWA near Ovid, 1077 m, 20-VII-2007, L, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993; 12-IX-1995, L, USGSNWQL; WYOMING, **Laramie Co**, *Crow Crk*, abv little *Bear Crk*

nr Phillips, 1831 m, 9-VII-2003, L, USGSNWQL; *Lodgepole Crk*, Rd 120 just W of I-25, 1829 m, 13-VII-2000, L, CSUC.

Remarks: Most literature refers to this species as *Baetis insignificans* (McCafferty et al. 1993). This transcontinental species is common throughout the foothills and plains section of the SPRB and apparently can tolerate moderate siltation and lower flows. Larvae can be collected most of the year. Specimens were collected from 865 m to 2439 m in elevation. Adults were present from May through July.

Acentrella turbida (McDunnough) 1924

Appendix A, page A5

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at 55th St in Boulder, 1583 m, 3-X-1996, L; 30-IX-1997, L; at 28th St in Boulder, 1613 m, 28-IX-1995, L; 30-IX-1997, L; at Broadway Ave in Boulder, 1630 m, 30-IX-1997, L; at Canyon mouth in Boulder, 1656 m, 30-IX-1997, L; 28-IX-1995, L; *S Boulder Crk*, at Baseline Rd in Boulder, 1607 m, 26-IX-1996, L; 30-VI-2003, L, USGSNWQL; *N Saint Vrain Crk*, abv Lyons, 1638 m, 22-VIII-1984, L, CSUC; *Dry Crk*, abv Baseline Rd near Boulder, 1606 m, 30-VI-2003, L, USGSNWQL; **Clear Creek Co**, *Clear Crk*, blw Hwy 40, 2763 m, 24-IX-1996, L, CSUC; **Jefferson Co**, *Clear Crk*, at Golden, 1577 m, 23-VIII-1993, L, USGSNWQL; **Larimer Co**, *Big Thompson R*, blw Moraine Park nr Estes Park, 2441 m, 17-VII-2002, L, USGSNWQL; *Cache la Poudre R*, at mouth of Cache la Poudre Canyon nr Fort Collins, 1594 m, 17-VII-1994, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL;

Young Gulch, 100 m from confl with Cache la Poudre River, 1829 m, 15-VII-1995, L, CSUC.

Remarks: This widespread North American species usually occurs as local populations in the SPRB. McCafferty et al. (1994) described the larvae and discussed biology of *A. turbida*. *Acentrella turbida* apparently prefers higher water quality and higher elevations than *A. insignificans* but can co-occur with *A. insignificans* at the same site such as mid-elevation reaches along South Boulder Creek. Specimens were collected at elevations between 1577 m and 2763 m.

Baetis bicaudatus Dodds 1923

Appendix A, page A6

Records: COLORADO, **Clear Creek Co**, *Clear Cr*, CR 306 by I-70 exit 232, 2536 m, 10-VII-2003, A, CSUC; *W Frk Clear Cr*, Hwy 40 W of Empire just upstrm from Blue Creek, 2902 m, 10-VII-2003, A, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VIII-1921, reared, INHS; **Larimer Co**, *Big Thompson R*, blw Moraine Park nr Estes Park RMNP, 2440 m, 8-VIII-1996, L, USGSNWQL; *Dadd Gulch*, nr Howard Evans home Glacier View subdivision, 2164 m, L, CSUC; *Fall R*, 0.4 km E of Endo Valley RMNP, 2637 m, 24-VII-1985, L, CSUC; *unknown small strm*, Long's Peak Trail RMNP, 3139 m, 16-VII-1994, L, CSUC; *Pennock Crk*, 63E Rd and 44H Rd, 2070 m, 11-VI-2007, A, CSUC; *trib to La Poudre Pass Crk*, nr Long Draw Res, 3069 m, 7-VII-2007, A, L, CSUC.

Remarks: This species was originally described by Dodds (1923) from South Boulder Creek in Boulder County. It is considered the common *Baetis* at high elevations in the SPRB, restricted to small and medium sized streams of high water quality. This species is likely more common in the SPRB than our records indicate. It typically co-occurs with *B. tricaudatus* at the lower end of its elevational distribution. This species was collected from elevations between 2070 m and 3139 m.

Baetis flavistriga McDunnough 1921

Appendix A, page A6

Records: COLORADO, **Adams Co**, *Clear Crk*, nr mouth, 1585 m, 10-IX-1993, L, USGSNWQL; **Arapahoe Co**, *S Platte R*, Mineral Rd Denver, 1628 m, 28-VIII-1993, L, CSUC; **Boulder Co**, *Bear Crk*, just upstrm from Wellman Feeder Canal in Boulder, 1606 m, 11-VII-2000, L, CSUC; *Boulder Crk*, at 55th St in Boulder, 1583 m, 29-IX-1993, L; 22-IX-1998, L; at 28th St in Boulder, 1613 m, 22-IX-1998, L; 28-IX-1995, L; at Broadway Ave in Boulder, 1630 m, 30-IX-1997, L; 1-X-1999, L; at Canyon mouth in Boulder, 1656 m, 1-X-1999, L; 3-X-1996, L; blw 61st St nr Boulder, 1570 m, 11-VII-2003, L, USGSNWQL; S *Boulder Crk*, at Baseline Rd in Boulder, 1609 m, 26-IX-1996, L; 29-IX-1993, L; *Saint Vrain Crk*, Longmont nr 85th and 9th Streets, 1530 m, 26-IX-2007, L, CSUC; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; *S Platte R*, Denver, 1577 m, 8-VII-1994, L, USGSNWQL; 5-IX-1995, L, USGSNWQL; *Lakewood Gulch*, abv Knox St Denver, 1598 m, 24-VI-2003, L, USGSNWQL; *Sanderson Gulch*, abv Lowell Ave Denver, 1634 m, 24-

VI-2003, L, USGSNWQL; **Douglas Co**, *Plum Crk*, nr Sedalia, 1682 m, 17-IX-1993, L, USGSNWQL; **Jefferson Co**, *Bear Crk*, blw Estes Rd at Lakewood, 1646 m, 23-VI-2003, L, USGSNWQL; *Clear Crk*, blw Kipling St at Wheat Ridge, 1631 m, 21-VII-2003, L, USGSNWQL; *Dutch Crk*, at Weaver Park nr Columbine Valley, 1649 m, 23-VI-2003, L, USGSNWQL; *Lena Gulch*, at Lewis Meadows Park at Wheat Ridge, 1655 m, 27-VI-2003, L, USGSNWQL; *Ralston Crk*, abv Simms at Arvada, 1655 m, 25-VI-2003, L, USGSNWQL; **Larimer Co**, *Big Thompson R*, Craggs Drive Estes Park, 2313 m, 28-VIII-1996, L, CSUC; blw Moraine Park nr Estes Park, 2440 m, 17-VI-2002, L, USGSNWQL; *Buckhorn Crk*, CR 23, 1550 m, 13-V-2001, L; *Cache la Poudre R*, at Overland Trail Rd, 1544 m, 30-V-1988, L, CSUC; 23-VII-1987, L, CSUC; at mouth of Canyon nr Fort Collins, 1594 m, 17-VII-1994, L, USGSNWQL.

Remarks: This widespread North American species is generally associated with montane regions of North America as far west as the Rocky Mountains of Utah with populations in the Great Lakes area (McCafferty and MacDonald 1994). Larvae often occur in high densities and can co-occur with *B. tricaudatus* and *A. insignificans*. It occurs in small and large streams of the SPRB from 1530 m and 2440 m in elevation.

Baetis magnus McCafferty and Waltz 1986

Appendix A, page A7

Records: COLORADO, **Elbert Co**, *Kiowa Crk*, at Elbert, 26-IV-1986, 2046 m, A, L, CSUC; **Larimer Co**, *Box Elder Crk*, Red Mountain Ranch N of Fort

Collins, 1919 m, 29-VI-2007, L, CSUC; *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 2-X-1986, L, CSUC; *Hewlett Gulch*, Hwy 14 Cache la Poudre Canyon, 1750 m, 23-III-1991, A, CSUC; 10-III-1991, A, CSUC; *Skin Gulch*, at Stove Prairie Rd in Cache la Poudre Canyon, 1892 m, 8-V-1993, A, CSUC; *spring*, in Hewlett Gulch in Cache la Poudre Canyon, 1778 m, 23-V-1993, A, CSUC; 23-III-1993, A, CSUC; *spring*, by ranch house at Soapstone Prairie Natural Area, 1918 m, 1-VII-2009, A, CSUC; 11-VII-2009, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 5-VI-2009, A, CSUC; *Spring Crk*, blw Spring Canyon Dam at Horsetooth Res Fort Collins, 1609 m, 16-IV-1987, L, CSUC; *Sand Crk*, Red Mountain Ranch N of Fort Collins, 1868 m, 13-IV-2007, L, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve, 14.5 km S of Fairplay, 2840 m, 21-V-1995, A, CSUC; 21-IV-1995, L, CSUC.

Remarks: Morihara and McCafferty (1979) designated the larvae of this species as *Baetis* sp. B. Later, McCafferty and Waltz (1986) formally named the larvae *B. magnus* and Durfee and Kondratieff (1993) described the adult males and females from reared specimens from Colorado. Larvae of *B. magnus* are larger in size than most *Baetis* species and often occur in small, spring-fed streams. Adults can emerge from January to May (Durfee and Kondratieff 1993), in the SPRB adults were collected from March through May. This species was collected at elevations between 1609 m and 2840 m.

Baetis notos Allen and Murvosh 1987

Appendix A, page A7

Records: COLORADO, **Boulder Co**, *Boulder Crk*, 2 km W of Boulder, 1813 m, 25-IX-2006, L, DRees; *Saint Vrain Crk*, Longmont near 85th and 9th Streets, 1532 m, 25-IX-2006, L, DRees; 26-IX-2007, L, DRees; Longmont 0.5 km dwnstrm of Hwy 287, 1532 m, 26-IX-2007, L, DRees; *S Boulder Crk*, 25-IX-2007, L, CSUC; **Douglas Co**, *Cherry Crk*, Castlewood Canyon State Park, 1992 m, 1-VI-1997, L, CSUC.

Remarks: The larvae of this species were designated *Baetis* sp. C by Morihara and McCafferty (1979). Later, Allen and Murvosh (1987) named it *B. notos* and Durfee and Kondratieff (1995) described adult males and females from New Mexico. This distinctively marked species is more common in southwestern North America (Durfee and Kondratieff 1995). This species was collected from 1532 m to 1992 m in elevation.

Baetis tricaudatus Dodds 1923

Appendix A, page A8

Records: COLORADO, **Adams Co**, *Clear Crk*, nr mouth, 1585 m, 10-IX-1993, L, USGSNWQL; *Sand Crk*, 200 m dwnstrm from Quebec St in Denver, 1588 m, 8-X-2000, L, CSUC; Peoria St at Denver, 1615 m, 27-VIII-1993, L, USGSNWQL; *S Platte R*, at Henderson, 1525 m, 27-VIII-1993, L, USGSNWQL; 7-IX-1995, L, USGSNWQL; *Little Dry Crk*, blw Lowell St nr Westminster, 1600 m, 25-VI-2003, L, USGSNWQL; **Arapahoe Co**, *Cottonwood Crk*, abv Newark

Way at Greenwood Village, 1712 m, 1-VII-2003, L, USGSNWQL; **Boulder Co**, *Bear Crk*, just upstrm from Wellman Feeder Canal in Boulder, 1606 m, 11-VII-2000, L, CSUC; 26-VI-2003, L, USGSNWQL; *Boulder Crk*, nr Castle Rock, 2317 m, 14-III-2006, L, DRees; at 55th St in Boulder, 1583 m, 29-IX-1993, L; 1-X-1999, L; at 28th St in Boulder, 1613 m, 26-IX-1996, L; 1-X-1999, L; at Broadway Ave in Boulder, 1630 m, 1-X-1999, L; 15-IV-1997, L; at Canyon Mouth in Boulder, 1656 m, 29-IX-1993, L; 1-X-1999, L; blw 61st St nr Boulder, 1569 m, 11-VII-2003, L, USGSNWQL; *Coal Crk*, abv McCaslin Rd at Superior, 1673 m, 26-VI-2003, L, USGSNWQL; *Dry Crk*, Niwot Rd bridge at Niwot, 1507 m, 24-III-2002, L, CSUC; Airport Rd at Longmont, 1530 m, 24-III-2002, L, CSUC; abv Baseline Rd nr Boulder, 1606 m, 30-VI-2003, L, USGSNWQL; blw Niwot Rd at Niwot, 1542 m, 2-VII-2003, L, USGSNWQL; blw Airport Rd nr Longmont, 1527 m, 3-VII-2003, L, USGSNWQL; *Dry Crk #1*, S Fordham St Longmont, 1509 m, 21-III-2002, L; *Left Hand Crk*, 81st St nr Niwot, 1387 m, 23-IX-1993, L, USGSNWQL; abv Pike Rd at Longmont, 1514 m, 7-VII-2003, L, USGSNWQL; S Pratt Parkway Longmont, 1512 m, 15-III-2002, L, CSUC; Pike Rd Longmont, 1515 m, 23-III-2002, L, CSUC; *Little Thompson R*, 8 km SW of Berthoud at 83rd St, 1475 m, 9-II-2008, L, CSUC; *Rock Crk*, abv Rock Creek Parkway at Superior, 1652 m, 27-VI-2003, L, USGSNWQL; *Saint Vrain Crk*, Hover Rd Longmont, 1519 m, 15-III-2002, L, CSUC; *Spring Gulch*, Sandstone Ranch Park Longmont, 1512 m, 15-III-2002, L, CSUC; *S Boulder Crk*, at Baseline Rd in Boulder, 1609 m, 13-IV-1995, L; L30-VI-2003, L, USGSNWQL; **Clear Creek Co**, *Clear Crk*, CR 306 I-70 exit 232, 2536 m, 23-IX-2003, A,

CSUC; *W Frk Clear Creek*, Hwy 40 W of Empire just upstrm from Blue Crk, 2902 m, 23-IX-2003, A, CSUC; 10-VII-2003, L, CSUC; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; *Cherry Crk*, Denver, 1576 m, 18-VII-2002, L, USGSNWQL; 1-VII-2003, L, USGSNWQL; *Lakewood Gulch*, abv Knox St at Denver, 1597 m, 24-VI-2003, L, USGSNWQL; *Sanderson Gulch*, abv Lowell Rd at Denver, 1633 m, 2-IV-2002, L, CSUC; 24-VI-2003, L, USGSNWQL; *S Platte R*, Denver, 1577 m, 26-VII-1993, L, USGSNWQL; 9-IX-1998, L, USGSNWQL; Bayaud Rd Denver, 1585 m, 16-IX-1998, L, DDEH; black Elitch tower in Denver, 1576 m, 20-IX-1993, L, DDEH; Colfax Ave in Denver, 1579 m, 24-IX-1997, L, DDEH; **Elbert Co**, *Kiowa Crk*, Hwy 86 nr Kiowa, 1932 m, 26-IV-1986, L, CSUC; at Kiowa, 2047 m, 26-IV-1986, A, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VIII-1915, VIII-1921, INHS; **Jefferson Co**, *Bear Crk*, blw Estes Rd at Lakewood, 1646 m, 2-IV-2002, L, CSUC; 23-VI-2003, L, USGSNWQL; *Big Dry Crk*, blw Hyland Creek at Westminster, 1609 m, 2-VII-2003, L, USGSNWQL; *Clear Crk*, at Golden, 1577 m, 23-VIII-1993, L, USGSNWQL; 8-IX-1995, L, USGSNWQL; blw Kipling St at Wheat Ridge, 1630 m, 21-VII-2003, L, USGSNWQL; *Dutch Crk*, at Weaver Park nr Columbine Valley, 1648 m, 23-VI-2003, L, USGSNWQL; *Ralston Crk*, abv Simms at Arvada, 1655 m, 25-VI-2003, L, USGSNWQL; *Lena Gulch*, at Lewis Meadows Park at Wheat Ridge, 1655 m, 27-VI-2003, L, USGSNWQL; *S Platte R*, 4.8 km off Waterton Rd in Platte Canyon, 1709 m, 6-VI-2008, L, CSUC; **Larimer Co**, *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; at Loveland, 1497 m, 16-IX-1993, L, USGSNWQL; 17-

VII-2002, L, USGSNWQL; Taft Rd at Loveland, 1518 m, 11-V-2001, L; Craggs Drive Estes Park, 2313 m, 28-VIII-1996, L, CSUC; blw Moraine Park nr Estes Park, 2440 m, 8-VIII-1996, L, USGSNWQL; 13-IX-1995, L, USGSNWQL; *Buckhorn Crk*, CR 23, 1550 m, 13-V-2001, L; 18 km W of Masonville, 2067 m, 28-V-1991, A, CSUC; *Cache la Poudre R*, abv Box Elder Crk nr Timnath, 1481 m, 22-IX-1993, L, USGSNWQL; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; Shields Rd Fort Collins, 1518 m, 24-IX-1996, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 8-IV-1987, A, CSUC; at Mouth of Canyon nr Fort Collins, 1594 m, 13-IX-1995, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL; at Upper Picnic Rock Access 5.6 km W of Hwy 287, 1602 m, 18-IV-1993, A, CSUC; *Dry Crk*, dwnstrm of Hwy 287 Loveland, 1518 m, 13-III-2002, L, CSUC; 14-VII-2003, L, USGSNWQL; *Hewlett Gulch*, nr Hwy 14 in Poudre Canyon, 1750 m, 23-III-1991, A, CSUC; 10-III-1991, L, CSUC; *Little Thompson R*, County Line Rd nr Berthoud, 1508 m, 14-V-2001, L; Hwy 287 bridge, 1508 m, 31-III-2001, L, CSUC; CR 4 upstrm of Berthoud, 1521 m, 8-IV-2002, L, CSUC; *Lone Pine Crk*, Lone Pine SWA, 2089 m, 7-VII-1993, L, CSUC; *Mail Crk*, upstrm from Fossil Crk Parkway in Fort Collins, 1507 m, 5-VII-2000, L, CSUC; 1521 m, 6-IV-1989, A, CSUC; nr mouth at Fort Collins, 1493 m, 8-VII-2003, L, USGSNWQL; *McClelland's Crk*, dwnstrm of Clear Crk Lane in Fort Collins, 1503 m, 3-VII-2000, L, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon, 1627 m, 16-V-1993, A, CSUC; *Skin Gulch*, at Stove Prairie Rd at Stove Prairie Rd, 1892 m, 8-V-1993, L, CSUC; *Spring Crk*, Drake Rd Fort Collins, 1540 m, 18-IV-1999, A, CSUC; at Edora Park Fort Collins, 1499 m, 7-

VII-2003, L, USGSNWQL; Bay Farm, 1545 m, 29-IV-1993, A, CSUC; 5100 Greenview Crt Fort Collins, 1521 m, 4-IV-1991, A, CSUC; CSU Campus, 1524 m, 8-VIII-1987, A, CSUC; *strm*, at CR 45E 1 km N of Virginia Dale off Hwy 287, 2127 m, 24-IV-1988, L, CSUC; *Young Gulch*, abv Ansel Watrous Cmpgrd in Cache la Poudre Canyon, 1769 m, 21-VII-1991, A, CSUC; 5-VII-1991, L, CSUC; **Park Co**, *Buckskin Crk*, FR 416 West of Alma, 3208 m, 23-IX-2003, A, CSUC; **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, L, CSUC; **Weld Co**, *Cache la Poudre R*, nr Greeley, 1401 m, 28-IX-1993, L, USGSNWQL; *Lonetree Crk*, at Carr, 1734 m, 28-VII-1993, L, USGSNWQL; 18-VII-1995, L, USGSNWQL; *Sheep Crk*, 60th Ave & F St in Greeley, 1430 m, 19-III-2002, L, CSUC; *S Platte R*, at Fort Lupton, 1487 m, 24-IX-1993, L, USGSNWQL; Hwy 37 N of Kersey, 1397 m, 3-III-2007, L, CSUC; *Saint Vrain Crk*, at mouth nr Platteville, 1445 m, 25-VIII-1993, L, USGSNWQL; *Spring Gulch*, at Sandstone Ranch Park nr Longmont, 1493 m, 3-VII-2003, L, USGSNWQL; WYOMING, **Laramie Co**, *Lodgepole Crk*, Rd 120, 1829 m, 27-II-2000, L, CSUC; 9-IV-2000, A, CSUC.

Remarks: *Baetis tricaudatus* was described by Dodds (1923) from South Boulder Creek in Boulder County. This is the most commonly reported mayfly in Colorado (McCafferty et al. 1993) and the SPRB. Larvae occur in streams of all sizes in the SPRB and can apparently tolerate a wide variety of stream conditions, even successfully colonizing irrigation canal networks and extensively urbanized streams (Schneider 2003). This species can co-occur with *B. bicaudatus* at higher elevations. Larvae can be collected year around.

Specimens were collected from elevations between 1077 m and 3208 m.

Adults were present March through August.

Callibaetis ferrugineus hageni Eaton 1885

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Records: COLORADO, **Adams Co**, *Wetland 4*, Rocky Mountain Arsenal, 1605 m, 21-VII-1992, A, CSUC; **Boulder Co**, *Glacier Lake*, 8 km N of Ward, 2766 m, 9-VIII-1939, INHS; *N Frk Big Thompson R*, nr Drake, 1890 m, 20-V-2007, A, CSUC; *Red Rock Lake*, N of Ward, 3096 m, 19-VII-1939, INHS; **Elbert Co**, *unknown small strm*, 1.6 km E of jct Rd 178 and Rd 45-48, 1801 m, 8-II-1987, L, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, 6-VII-1915, INHS; **Jefferson Co**, *Parmalee Gulch*, Parmalee Gulch Rd, 2195 m, 6-IX-1988, A, CSUC; **Larimer Co**, *Cache la Poudre R*, at College Ave in Fort Collins, 1507 m, 21-IV-1986, L, CSUC; at Lincoln Ave bridge in Fort Collins, 1508 m, 24-IV-1991, A, CSUC; Dixon Res, 1579 m, 8-V-1989, A, CSUC; IV-1994, A, CSUC; *overflow ponds*, Lions Park at Overland Trail Rd Fort Collins, 1544 m, 21-IX-1991, A, CSUC; 19-VIII-1990, L, CSUC; *Louie Swift Ponds*, off I-25 nr Fort Collins, 1474 m, 28-VIII-1987, L, CSUC; *Spring Crk*, blw Spring Crk Dam, 1591 m, 1-V-1994, A, CSUC; 16-IV-1987, A, L, CSUC; *County Canal #2*, 1700 W Plum St at Fort Collins, 1536 m, 25-VIII-2006, A, CSUC; **Park Co**, *Antero Res*, Antero SWA, 2720 m, 6-VI-1991, A, CSUC; *S Frk S Platte R*, Knight-Imler SWA, 2802 m, 13-VIII-1996, A, CSUC; *High Crk Fen*, High Crk Federal Preserve 14.5 km S of Fairplay, 2840 m, 21-IV-1995, A reared, emerged 21-V-1995, CSUC; Teller Co, *Rule Crk*, N of Woodland Park, 2436 m, 2-VIII-1987, A,

CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 7-VIII-2007, A, CSUC.

Remarks: This is the most ubiquitous lentic mayfly species of the SPRB. It is probably more common across the eastern plains portion of the SPRB than our records indicate. Interestingly, Caudill (2002) observed females of this species in the Gunnison River in Colorado mating as winged subimagos then molting to the full imago stage two weeks later to bear live larvae. Check (1982) revised *Callibaetis* of North America. This species was collected at elevations between 1474 m and 3096 m. Adults were present from April through September.

**Callibaetis fluctuans* (Walsh) 1862

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Records: COLORADO, **Larimer Co**, *overflow ponds*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 19-VIII-1990, L, CSUC **Weld Co**, *Dove Well*, Pawnee National Grass Land, 1648 m, 15-IX-1986, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 7-VIII-2007, A, CSUC.

Remarks: A transcontinental lentic species (McCafferty et al. 1993) that is apparently uncommon in the SPRB, with only three confirmed records. This species is likely more common in the SPRB than our records indicate as it was reported from ponds near the foothills the eastern most portion of the basin on the plains. Specimens were collected from elevations between 1544 m and 1648 m. Adults were collected in July and September.

**Callibaetis pictus* (Eaton) 1871

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Records: COLORADO, **Denver Co**, *Sand Crk*, (McCafferty et al. 1993); **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VII-1921, INHS; **Larimer Co**, *Loch Vale*, RMNP, 3050 m, PERC; *Spring Crk*, Spring Crk Dam, 1592 m, 16-IV-1987, L, CSUC.

Remarks: This western representative of the genus has been reported infrequently in the SPRB. This species was collected at elevations ranging from 1592 m to 3050 m.

**Centroptilum bifurcatum* McDunnough 1924

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Records: COLORADO, **Larimer Co**, *New Mercer Canal*, immediately W of Shields St Fort Collins, 1537 m, 29-VIII-2001, L, CSUC; immediately S of Horsetooth Rd Fort Collins, 1537 m, 29-VIII-2001, L, CSUC.

Remarks: The only SPRB records reported for this species were collected in 2001 by Schneider (2003). This species is relatively widespread in the western and Midwestern United States with populations recently found in Nebraska and Kentucky (Wiersema and McCafferty 2004). Larval specimens were collected from an irrigation ditch flowing through Fort Collins at 1537 m in elevation.

**Centroptilum conturbatum* McDunnough 1929

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Records: COLORADO, **Douglas Co**, *Cherry Crk*, Castlewood Canyon State Park, 1994 m, 19-VII-1997, L, CSUC.

Remarks: This species is known from central and western Canada south through the intermountain U.S. (Wiersema and McCafferty 2004). This single record was the only one known from the SPRB. Specimens were collected at 1994 m in elevation.

Dipheter hageni (Eaton) 1885

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Records: COLORADO, **Boulder Co**, *S Boulder Crk*, 1652 m, 25-IX-2007, L, DRees; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VII-1915, INHS; **Jefferson Co**, *S Platte R*, 1.6 km up Waterton Canyon, 1682 m, 29-VIII-1993, L, CSUC; **Larimer Co**, *Cache la Poudre R*, at mouth of canyon nr Fort Collins, 1594 m, 17-VII-1994, L; 16-VIII-1994, L, USGSNWQL; *Little Beaver Crk*, CR 63 E, 2411 m, 6-VIII-1995, A, CSUC.

Remarks: This transcontinental species occurs in the SPRB usually as local populations. Ward (1986) reported this species from the Saint Vrain Creek in Boulder County as *Baetis hageni*, an earlier combination later changed to *Dipheter hageni* by Waltz and McCafferty (1987). This species is probably more common in the SPRB than our records indicate. Specimens were collected

from large and small streams at elevations between 1594 m and 2704 m. The only adult record was collected in early August.

Fallceon quilleri (Dodds) 1923

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Records: COLORADO, **Adams Co**, *Little Dry Crk*, blw Lowell St nr

Westminster, 1600 m, 25-VI-2003, L, USGSNWQL; *Sand Crk*, 20 m dwnstrm from Quebec St at Denver, 1588 m, 8-X-2000, L, CSUC; Peoria St at Denver, 1615 m, 27-VIII-1993, L, USGSNWQL; *S Platte R*, at Henderson, 1525 m, 19-VII-1994, L, USGSNWQL; 7-IX-1995, L, USGSNWQL; **Boulder Co**, *Boulder Crk*, 1619 m, VII-1915, INHS; at Canyon mouth in Boulder, 1656 m, 25-IX-2007, L, DRees; at 55th St in Boulder, 1584 m, 25-IX-2007, L, DRees; upstrm from Dry Crk confl, 1544 m, 25-IX-2007, L, DRees; at Hwy 287, 1528 m, 25-IX-2007, L, DRees; *Coal Crk*, abv McCaslin Rd at Superior, 1673 m, 26-VI-2003, L, USGSNWQL; *Dry Crk*, blw Airport Rd nr Longmont, 1527 m, 3-VII-2003, L, USGSNWQL; blw Niwot Rd at Niwot, 1542 m, 2-VII-2003, L, USGSNWQL; *Left Hand Crk*, 81st St nr Niwot, 1387 m, 23-IX-1993, L, USGSNWQL; at confl of Saint Vrain Crk, 1527 m, 26-IX-2007, L, USGSNWQL; *Rock Crk*, abv Rock Creek Parkway at Superior, 1652 m, 27-VI-2003, L, USGSNWQL; *Saint Vrain Crk*, Longmont nr 85th and 9th Streets, 1530 m, 26-IX-2007, L, DRees; Longmont 0.8 km dwnstrm of Hwy 287, 1504 m, 26-IX-2007, L, DRees; CR 1 Longmont, 1491 m, 26-IX-2007, L, DRees; upstrm confl with Boulder Crk, 1477 m, 26-IX-2007, L, DRees; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; *Cherry Crk*, Denver, 1579 m, 18-VII-2002, L,

USGSNWQL; *S Platte R*, Denver, 1577 m, 9-IX-1998, L, USGSNWQL; 8-VII-1994, L, USGSNWQL; **Douglas Co**, *Castlewood Canyon State Park*, on canyon rim, 1994 m, 28-IX-1997, A, CSUC; *Cherry Crk*, Castlewood Canyon State Park, 1994 m, 10-XI-1996, L, CSUC; *Plum Crk*, nr Sedalia, 1682 m, 17-IX-1993, L, USGSNWQL; **Jefferson Co**, *Bear Crk*, blw Estes Rd, 1646 m, 2-IV-2002, L, CSUC; *Big Dry Crk*, blw Hyland Creek at Westminster, 1609 m, 2-VII-2003, L, USGSNWQL; *Clear Crk*, blw Kipling St at Wheat Ridge, 1630 m, 21-VII-2003, L, USGSNWQL; **Larimer Co**, *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; at Loveland, 1497 m, 16-IX-1993, L, USGSNWQL; blw Moraine Park nr Estes Park, 2440 m, 13-IX-1995, L, USGSNWQL; 17-VII-2002, L, USGSNWQL; *Cache la Poudre R*, abv Box Elder Crk nr Timnath, 1481 m, 22-IX-1993, L, USGSNWQL; 21-IX-1993, L, USGSNWQL; at mouth of Canyon nr Fort Collins, 1594 m, 17-VII-1994, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL; *Dry Crk*, at Hwy 287 at Loveland, 1523 m, 14-VII-2003, L, USGSNWQL; *Fossil Crk*, at College Ave at Fort Collins, 1505 m, 8-VII-2003, L, USGSNWQL; *Little Thompson R*, Rd 44 nr Berthoud, 1475 m, 20-IX-1993, L, USGSNWQL; County Line Rd, 1508 m, 14-V-2001, L; *Mail Crk*, just upstrm of confl with Fossil Crk in Fort Collins, 1494 m, 5-VII-2000, L, CSUC; nr mouth at Fort Collins, 1493 m, 8-VII-2003, L, USGSNWQL; *McClelland's Crk*, dwnstrm of *Clear Crk* Lane Fort Collins, 1505 m, 3-VII-2000, L, CSUC; **Morgan Co**, *S Platte R*, at Cooper Bridge nr Balzac, 1261 m, 27-VII-1993, L, USGSNWQL, 11-IX-1995, L, USGSNWQL; nr Weldona, 1313 m, 30-IX-1993, L, USGSNWQL; **Sedgwick Co**, *Lodgepole Crk*,

nr Ovid, 1076 m, 27-IX-1993, L, USGSNWQL; *S Platte R*, CR 29 bridge S of Ovid, 1073 m, 10-IX-2000, L, CSUC; Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, L, CSUC; **Weld Co**, *Lonetree Crk*, at Carr, 1734 m, 18-VII-1995, L, USGSNWQL; 20-VII-1993, L, USGSNWQL; *Saint Vrain Crk*, mouth nr Platteville, 1445 m, 7-IX-1995, L, USGSNWQL; 25-VIII-1993, L, USGSNWQL; *S Platte R*, at Fort Lupton, 1487 m, 24-IX-1993, L, USGSNWQL; nr Balzac, 1261 m, 27-VII-1997, L, CSUC; nr Kersey, 1395 m, 21-VII-1994, L, USGSNWQL; 10-VII-2003, L, CSUC; nr La Salle, 1408 m, 2-IX-1993, L, USGSNWQL; *Spring Gulch*, at Sandstone Ranch Park nr Longmont, 1493 m, 3-VII-2003, L, USGSNWQL; NEBRASKA, **Keith Co**, *S Platte R*, at Paxton, 933 m, 21-VII-2007, A, CSUC; **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL; 12-IX-1995, L, USGSNWQL; WYOMING, **Laramie Co**, *Lodgepole Crk*, Rd 120, 1829 m, 13-VII-2000, L, CSUC.

Remarks: This mayfly was described as *Baetis quilleri* by Dodds (1923) from South Boulder Creek, in Boulder, Colorado on the plains near the foothills.

Waltz and McCafferty (1987) moved this species to the genus *Fallceon*.

Populations of this common species can often be found in warm and silty plains streams and mountain streams throughout the SPRB. Specimens were collected at elevations between 865 m and 2440 m. Adults were present July through September.

Paracloeodes minutus (Daggy) 1945

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Records: COLORADO, **Denver Co**, *Cherry Crk*, Denver, 1579 m, 18-VII-2002, L, USGSNWQL; **Logan Co**, *S Platte R*, Tamarack Ranch SWA, 1137 m, 20-VII-2007, A, CSUC; **Morgan Co**, *S Platte R*, Cottonwood SWA N of Brush, 1266 m, 5-VII-2000, A, CSUC; Elliott SWA at CR 56, 1252 m, 21-VI-2007, A, CSUC; **Weld Co**, *S Platte R*, nr Kersey, 1395 m, 15-VII-2002, L, USGSNWQL; nr LaSalle, 1418 m, 2-IX-1993, L, CSUC; NEBRASKA, **Keith Co**, *S Platte R*, at Paxton, 933 m, 21-VII-2007, A, CSUC.

Remarks: This tiny species of baetid mayfly can be overlooked and as a result is likely more common than our records indicate. Males were observed swarming by the thousands along the South Platte River on the plains. Durfee and Kondratieff (1994a) reported this species in Colorado for the first time from the Conejos River in southern Colorado. This species was collected at elevations from 933 m to 1579 m in the SPRB. Adults were present in June and July.

Plauditus punctiventris (McDunnough) 1923

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Records: COLORADO, **Denver Co**, *S Platte R*, Dartmouth Rd in Denver, 1601 m, 15-IX-2000, L, DDEH; Evans Ave in Denver, 1598 m, 9-IX-1999, L, DDEH; 16-IX-1999, L, DDEH; **Larimer Co**, *Dale Crk*, abv confl with N F Cache la

Poudre R, 2103 m, 9-X-2003, L, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 16-VII-2000, L, CSUC.

Remarks: An uncommon species in the SPRB, known only from recent collections on the plains and foothills. The genus *Plauditus* was established for certain North American *Baetis* complex species based on larval characteristics (Lugo-Ortiz and McCafferty 1998). Specimens were collected from 1598 m to 2103 m in elevation.

**Plauditus virilis* (McDunnough) 1923

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Records: COLORADO, **Larimer Co**, *N Poudre Supply Canal #3*, at CR 27, 1644 m, 21-VIII-1996, L, CSUC; *N Poudre Canal #16*, CR 80C (Cherokee Rd), 1820 m, 22-IX-1996, L, CSUC.

Remarks: McCafferty et al. (1993) reported this species in Colorado for the first time as *Baetis virile* from an irrigation canal network system in Northern Colorado. Specimens were collected from 1644 m to 1820 m in elevation.

Pseudocloeon dardanum (McDunnough) 1923

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Records: COLORADO, **Adams Co**, *Big Dry Crk*, 1596 m, 8-X-1997, L, CSUC; *S Platte R*, at Henderson, 1525 m, 7-IX-1995, L, USGSNWQL; **Denver Co**, *Sand Crk*, Peoria St at Denver, 1615 m, 27-VIII-1993, L, USGSNWQL; *S Platte R*, at Denver, 1577 m, 5-IX-1995, L, USGSNWQL; **Douglas Co**, *S Platte R*,

upstrm of I-470, 1634 m, 18-IX-1997, L, DDEH; **Larimer Co**, *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; at Rd 44 nr Berthoud, 1475 m, 20-IX-1993, L, USGSNWQL; *County Canal #2*, immediately N of Bingham Hill Rd Fort Collins, 1536 m, 19-VI-2001, L, CSUC; 20-VII-2001, L, CSUC; immediately W of Shields St Fort Collins, 1538 m, 3-VI-2001, L, CSUC; 20-VII-2001, L, CSUC; *New Mercer Canal*, immediately N of Bingham Hill Rd Fort Collins, 1530 m, 14-V-2001, L, CSUC; 20-VII-2001, L, CSUC; immediately W of Shields St Fort Collins, 1537 m, 20-VI-2001, L, CSUC; 29-VIII-2001, L, CSUC; immediately south of Horsetooth Rd, 1537 m, 14-V 2001, L, CSUC; 29-VIII-2001, L, CSUC; *McClelland's Crk*, dwnstrm from Clear Crk Lane in Fort Collins, 1503 m, 19-VII-2000, L, CSUC; **Logan Co**, *Irrigation Ditch*, at 57.5 Rd E of Iliff, 1169 m, 10-IX-2000, L, CSUC; *S Platte R*, Tamarack Ranch SWA, 1137 m, 20-VII-2007, A, CSUC; **Morgan Co**, *Irrigation Ditch*, 0.8 km n of Brush SWA, 1283 m, 2-VI-2007, A, CSUC; *S Platte R*, at Cooper Bridge nr Balzac, 1261 m, 27-VII-1993, L, USGSNWQL; Brush SWA, 1273 m, 2-VI-2007, A, CSUC; Jean K. Tool SWA, 1280 m, 2-VI-2007, A, CSUC; **Sedgwick Co**, *Lodgepole Crk*, nr Ovid, 1076 m, 27-IX-1993, L, USGSNWQL; *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; **Weld Co**, *Lonetree Crk*, nr Greeley, 1411 m, 6-IX-1995, L, USGSNWQL; 21-VII-1993, L, USGSNWQL; *S Platte R*, nr Kersey, 1394 m, 21-VII-1994, L, USGSNWQL; 2-VIII-1993, L, USGSNWQL; nr Balzac, 1261 m, 24-IX-1993, L, USGSNWQL; *Saint Vrain Crk*, nr Platteville, 1445 m, 7-IX-1995, L, USGSNWQL; 25-VIII-1993, L, USGSNWQL;

NEBRASKA, **Keith Co**, *S Platte R*, at Paxton, 933 m, L, 21-VII-2007, CSUC;

Lincoln Co, *S Platte R*, at N Platte, 865 m, 12-IX-1995, L, USGSNWQL; no date, L, CSUC.

Remarks: The larvae of this baetid apparently can tolerate a wide range of water quality conditions as it has colonized semi permanent irrigation canal networks (Schneider 2003). It is widespread in the eastern portion of the SPRB. Specimens were collected at elevations from 865 m to 1634 m. Adults were present in June and July.

Caenidae (Squaregill Mayflies)

**Amercaenis ridens* (McDunnough) 1931

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Records: NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL.

Remarks: This species is apparently restricted to sandy bottom rivers of the Great Plains (Provonsha and McCafferty 1985) reaching its western limit in the eastern portion of the SPRB in western Nebraska. Specimens were collected at 865 m in elevation.

Caenis amica Hagen 1861

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Records: COLORADO, **Boulder Co**, *pond*, at 21st and Hover St Longmont, 1545 m, 21-V-1993, A, CSUC; **Larimer Co**, *Shields Pond*, BLT Fort Collins, 1543 m, 5-VII-1991, A, CSUC; **Morgan Co**, *S Platte R*, at Cooper Bridge nr

Balzac, 1261 m, 27-VII-1993, L, USGSNWQL; **Weld Co**, *Lost Crk*, BLT 3.2 km N of Roggen at CR 386, 1417 m, 5-VI-1993, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL.

Remarks: This widespread and common species can be found in many types of lentic and lotic habitats across the U.S. (Provonsha 1990) and may be more common in the SPRB than records indicate. It was collected only in the plains portion of the basin at elevations between 865 m and 1545 m. Adults were present May through July.

Caenis bajaensis Allen and Murvosh 1983

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Records: COLORADO, **Jefferson Co**, *Woman Crk*, Rocky Flats, 1728 m, 19-X-2001, L, CSUC; **Larimer Co**, *N Frk Cache la Poudre R*, 200 m upstream from confl with Cache la Poudre R, 1645 m, 1-III-2008, L, CSUC; *Park Crk*, 32 km N of Fort Collins, 1716 m, 8-V-1977, L, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, L, 5-VI-2009, A, CSUC; WYOMING, **Laramie Co**, *Lodgepole Crk*, Rd 120, 1829 m, 13-VII-2000, L, CSUC.

Remarks: This species is known from sandy bottom streams in Mexico and southwestern U.S. Provonsha (1990) reported a record from Berthoud Pass in Clear Creek County, Colorado (3500 m), which seems unusual as other SPRB records are from lower elevations between 1645 m and 1829 m.

Caenis latipennis Banks 1907

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Records: COLORADO, **Larimer Co**, *Shields Pond*, BLT Fort Collins, 1543 m, 5-VII-1991, A, CSUC; 26-III-1991, L, CSUC; **Logan Co**, *S Platte R*, Tamarack Ranch SWA, 1137 m, 20-VII-2007, L, CSUC; **Weld Co**, *Lonetree Crk*, at Carr, 1734 m, 18-VII-1995, L, USGSNWQL; 20-VII-1993, L, USGSNWQL; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL.

Remarks: This is another species of *Caenis* known from most of the U.S. (Provonsha 1990, Randolph 2002). It occurs in streams, lakes and ponds, especially if aquatic vegetation is present. Specimens were collected from 865 m to 1734 m in elevation. Adults were present in July.

**Caenis punctata* McDunnough 1931

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Records: COLORADO, **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1746 m, 21-V-1994, A, CSUC; *Louis Swift Ponds*, S of Harmony Rd off I-25 nr Fort Collins, 1475 m, 10-VIII-1986, L, CSUC; **Weld Co**, *unknown strm*, 3.2 km SSE Roggen, 1480 m, 6-V-1993, A, CSUC.

Remarks: A species similar to *C. amica*, although larvae seem to prefer sand and gravel substrates (Provonsha 1990). This species apparently reaches its western limit in the SPRB where it was collected at elevations between 1475 m and 1746 m. Adults were present in May.

**Caenis tardata* McDunnough 1931

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Records: COLORADO, **Larimer Co**, *Little Thompson R*, CR 44 nr Berthoud, 1475 m, 20-IX-1993, L, USGSNWQL; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 25-VII-1994, L, USGSNWQL.

Remarks: This species is known from sandy and silty bottom rivers in the SPRB but is generally associated with large rivers in other parts of its distribution. McCafferty et al. (1993) reported *C. tardata* from montane regions at higher elevations in Colorado. It is probably more common in the basin than our records indicate. In the SPRB this species is currently known only from the plains portion, at elevations between 865 m and 1475 m.

Ephemerellidae (Spiny Crawler Mayflies)

Attenella margarita (Needham) 1927

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Records: COLORADO, **Boulder Co**, *S Boulder Crk*, 1652 m, 25-IX-2008, L, DRees; *Saint Vrain Crk*, Ward and Berner (1980); **Larimer Co**, *Big Thompson R*, Crags Drive Estes Park, 2313 m, 29-VIII-1996, L, CSUC; *Cache la Poudre R*, at mouth of Canyon nr Fort Collins, 1594 m, 16-VIII-1994, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL.

Remarks: This species occurs in western and northeastern North America but is much more common in the western portion of its range (McCafferty et al.

1993). This species is probably more common in the SPRB than our records indicate. Specimens were collected from 1594 m to 2313 m in elevation.

Drunella coloradensis (Dodds) 1923

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Records: COLORADO, **Boulder Co**, *Como Crk*, Little Royal Gorge 3.2 km E of CU Science Lodge, 2689 m, 1-VIII-1939, INHS; CU Science Lodge, 2899 m, 24-VII-1939, INHS; 28-VI-1939, INHS; *Green Lakes drainage*, (Bushnell et al. 1987); *trib to Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, A, CSUC; *N Boulder Crk*, (Elgmork and Saether 1970); *S Boulder Crk*, Hessie, 3190 m, 12-IX-1998, A, CSUC; Mesa Trailhead in Boulder, 1760 m, 3-X-1995, A, CSUC; *Saint Vrain Crk*, (Ward and Berner 1980); **Clear Creek Co**, *Clear Crk*, at Silver Plume, 2789 m, VII-1938, INHS; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, 27-VII-1921, INHS; **Larimer Co**, *Big Thompson R*, blw Moraine Park nr Estes Park, 2440 m, 13-IX-1995, L, USGSNWQL; 8-VIII-1996, L, USGSNWQL; nr Windy Gulch in RMNP, 2498 m, 10-IX-1993, A, CSUC; *Fall R*, 0.5 km W of Cascade Cottages in RMNP, 2592 m, 23-VII-1985, L, CSUC; Lawn Lake trailhead RMNP, 2598 m, 22-VII-1987, L, CSUC; *Icy Brk*, abv The Loch in RMNP, 3103 m, 24-VIII-1988, A, CSUC; *Joe Wright Crk*, (Short and Ward 1980); *Lone Pine Crk*, Lone Pine Crk SWA, 2089 m, 29-IX-1990, A, CSUC; *Trap Crk*, Trap Crk Park, 3141 m, 14-IX-1991, A, CSUC.

Remarks: This common western North American *Drunella* species was described from South Boulder Creek, Boulder County by Dodds (1923) and

occurs in most small and medium sized montane streams in the SPRB.

McCafferty et al. (1993) reported additional records from Boulder, Clear Creek, Gilpin, and Pitkin Counties, Colorado. This species was collected between 1760 m and 3190 m in elevation. Adults were collected from August through October.

Drunella doddsii (Needham) 1927

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Records: COLORADO, **Boulder Co**, *Boulder Crk*, at 28th St in Boulder, 1613 m, 30-IX-1997, L; at Broadway Ave in Boulder, 1630 m, 1-X-1999, L; at Canyon mouth in Boulder, 1656 m, 15-IV-1997, L; 1-X-1999, L; *S Boulder Crk*, El Dorado Springs, 1743 m, 1-III-1975, L, CSUC; *Como Crk*, CU Science Lodge, 2899 m, 24-VII-1939, INHS; *Left Hand Crk*, nr Altona, 1703 m, 18-II-1943, INHS; *Saint Vrain Crk*, E of Lyons, 1600 m, 18-II-1943, INHS; **Clear Creek Co**, *Clear Crk*, confl with W Clear Crk, 2512 m, 10-X-1985, L, CSUC; CR 306 I-70 exit 232, 2536 m, 10-VII-2003, L, CSUC; *W Frk Clear Crk*, Hwy 40 W of Empire just upstrm from Blue Crk, 2902 m, 1-VII-2003, L, CSUC; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, L, CSUC; **Larimer Co**, *Big Thompson R*, Estes Park, 2313 m, 18-II-1943, INHS; blw Moraine Park nr Estes Park, 2440 m, 8-VIII-1996, L, USGSNWQL; 13-IX-1995, L, USGSNWQL; *Cache la Poudre R*, at mouth of canyon nr Fort Collins, 1594 m, 13-IX-1995, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL; 3.5 km dwnstrm from Kinikini, 2331 m, 24-II-2008, L, DRees; *Chasm Falls*, RMNP, 2773 m, 27-VII-1938, INHS; *Fall R*, RMNP, 2598 m, 6-VIII-1985, L, CSUC; *Glacier Crk*, Bear Lake Rd

RMNP, 2631 m, 18-II-1943, INHS; *inlet to Long Draw Res*, N side of Long Draw Res, 3103, 7-VII-2007, L, DRees.

Remarks: This species is easily distinguished in the larval stage by the ventral abdominal adhesive disc that helps it cling to substrate in swift currents. It is generally known from moderate and high gradient, medium and large mountain streams and is probably found in all larger montane streams in the SPRB.

McCafferty et al. (1993) reported additional records from Clear Creek County, Colorado. Specimens were collected from 1594 m to 3103 m in elevation.

Drunella grandis (Eaton) 1884

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Records: COLORADO, **Boulder Co**, *Boulder Crk*, at 55th St in Boulder, 1583 m, 28-IX-1995, L; 1-X-1999, L; at 28th Street, 1613 m, 1-X-1999, L; 29-IX-1993, L; at Broadway Ave in Boulder, 1630 m, 1-X-1999, L; at Boulder, 1631 m, 19-II-1943, INHS; at Canyon mouth in Boulder, 1656 m, 29-IX-1993, L; 1-X-1999, L; *Mid Boulder Crk*, nr Castle Rock, 2317 m, 14-III-2006 L, DRees; *S Boulder Crk*, at Baseline Rd nr Boulder, 1612 m, 30-VI-2003, L, USGSNWQL; *N Saint Vrain Crk*, 13.2 km N of Longmont, 1690 m, 20-X-1974, L, CSUC; W of Lyons, 1690 m, 3-VII-1992, L, CSUC; *S Saint Vrain Crk*, abv Lyons, 1663 m, 18-VIII-1943, INHS; *Saint Vrain Crk*, E of Lyons, 1600 m, 18-II-1943, INHS; 3.5 km dwnstrm from Kinikinik, 2331 m, 24-II-2008, L, DRees; **Douglas Co**, *West Crk*, 2277 m, 5-VII-1938, INHS; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, 27-VII-1921, INHS; **Jefferson Co**, *Bear Crk*, at Troutdale, 2178 m, 12-II-1943,

INHS; **Larimer Co**, *Big Thompson R*, Hwy 34 at Drake, 1875 m, 8-VII-1998, A, CSUC; Estes Park, 2313 m, 26-VII-1938, INHS; RMNP 180 m SE Bear Lake Rd, 2440 m, 3-VII-1985, L, CSUC; blw Moraine Park nr Estes Park, 2440 m, 13-IX-1995, L, USGSNWQL; 17-VII-2002, L, USGSNWQL; *Buckhorn Crk*, 1.2 km up 44H from Jct with CR 27, 1960 m, 6-IX-1987, L, CSUC; 0.8 km abv Stove Prairie Crk, 1978 m, 26-II-1989, INHS; *Cache la Poudre R*, at mouth of canyon nr Fort Collins, 1594 m, 26-VIII-1993, L, USGSNWQL; Hwy 14 at Diamond Rock, 1820 m, 25-VIII-2006, L, CSUC; 3.5 km dwnstrm from Kinikini, 2317 m, 24-II-2008, L, DRees; *Chasm Falls*, RMNP, 2773 m, 27-VII-1938, INHS; *Fall R*, Estes Park, 2304 m, 15-VIII-1940, INHS; *Fall R*, Horseshoe Park RMNP, 2598 m, 18-II-1943, INHS; *Glacier Crk*, RMNP, 2631 m, 17-VIII-1940, INHS; *Mill Crk*, Estes Park, 2544 m, 18-II-1943, INHS; *N Frk Big Thompson R*, 4.8 km W of Drake nr CR 43, 2133 m, 20-V-2007, L, CSUC.

Remarks: A common western mayfly that occurs in most medium to large montane streams in Colorado. This is the famous “green drake” well known by anglers that emerges from June to July. Specimens were collected between 1583 m and 2773 m in elevation. The only adult record was reported in July.

**Ephemerella apopsis* McCafferty 1992

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Records: COLORADO, **Boulder Co**, *Chasm Lake*, RMNP, 3353 m, 24-VII-1947, A, PERC.

Remarks: The above type material is the only known record for this species.

This species is closely related to the eastern species, *Draconia needhami* McDunnough (Jacobus and McCafferty 2008), and may possibly be a variant of this species (McCafferty 1992). McCafferty (1992) also adds that it is odd that there are no other records of this species available considering the amount of benthic studies that have occurred in Colorado. Additional effort targeting the type locality and similar habitats is needed to confirm the taxonomy, existence, and distribution of this species. Currently this species is considered valid and endemic to Colorado and the SPRB (McCafferty 1992).

Ephemerella dorothea infrequens McDunnough 1924

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Records: COLORADO, **Boulder Co**, *Boulder Crk*, nr Castle Rock, 2317 m, 14-III-2006, L, DRees; *S Saint Vrain Crk*, Hwy 7 7.2 km upstrm from hwy 36 in Lyons, 1753 m, 2-VI-2003, A, CSUC; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2764 m, 7-VII-1991, A, CSUC; **Jefferson Co**, *S Platte R*, 4.8 km off Waterton Rd in Platte Canyon, 1709 m, 6-IV-2008, L, CSUC; **Larimer Co**, *Big Thompson R*, Hwy 34 at Drake, 1875 m, 8-VII-1998, A, CSUC; 8 km dwnstrm of Estes Park on Hwy 34, 2146 m, 20-V-1997, L, CSUC; 30-VII-1997, L, CSUC; Estes Park, 2313 m, 26-VII-1938, INHS; RMNP 180 m SE Bear Lake Rd, 2440 m, 3-VII-1985, L, CSUC; *Buckhorn Crk*, 32 km abv Masonville, 2033 m, 31-V-1980, A, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 4-IX-1996, L, CSUC; at mouth of canyon nr Fort Collins, 1594 m, 26-VIII-1993, L, USGSNWQL; *N Frk Cache la Poudre R*, Phantom Canyon,

1627 m, 27-VI-1990, A, CSUC; *County Canal #2*, just N of Bingham Hill Rd Fort Collins, 1536 m, 20-VI-2001, L; *Hewlett Gulch*, off Hwy 14 in Cache la Poudre Canyon, 1750 m, 10-III-1991, L, CSUC; *Dale Crk*, Hwy 287 bridge, 2059 m, 26-IV-1992, L, CSUC; *Little Beaver Crk*, nr 63 E Rd, 2411 m, 6-VIII-1995, A, CSUC; *New Mercer Canal*, just N of Bingham Hill Rd Fort Collins, 1530 m, 14-V-2001, L; 19-VI-2001, L; **Park Co**, *S Platte R*, Knight-Imler SWA Hwy 285, 2802 m, 13-VIII-1996, A, CSUC.

Remarks: Previous records of this species in Colorado were reported as *E. infrequens* McDunnough which Jacobus and McCafferty (2003) considered a subspecies of *E. dorothea* Needham. They caution that larvae of the two subspecies are difficult to distinguish but suggest the nominate form *E. d. infrequens* occurs in western North America and *E. d. dorothea* in eastern North America. Specimens were collected between 1530 m and 2802 m in elevation. Adults were present May through August.

Ephemerella excrucians Walsh 1862

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Records: COLORADO, **Arapahoe Co**, *S Platte R*, Littleton, 1619 m, 13-II-1943, INHS; **Boulder Co**, *Bear Crk*, Troutdale, 2178 m, 12-II-1943, INHS; *Boulder Crk*, Boulder, 1631 m, 19-II-1943, INHS; abv Boulder Falls, 2232 m, 29-II-1943, INHS; *N Saint Vrain Crk*, abv Lyons, 1658 m, 18-II-1943, INHS; *Saint Vrain Crk*, E of Lyons, 1600 m, 18-II-1945, INHS; **Douglas Co**, *Woman Crk*, 2277 m, 5-VII-1938, INHS; **Jefferson Co**, *S Platte R*, bridge at upper end of Chatfield

Res, 1939 m, 28-VI-1982, L, CSUC; **Larimer Co**, *Big Thompson R*, Drake, 1875 m, 18-II-1945, INHS; Estes Park, 2313 m, 26-VII-1938, INHS; blw Moraine Park nr Estes Park, 2440 m, 8-VIII-1996, L, USGSNWQL; 17-VII-2002, L, USGSNWQL; *Cache la Poudre R*, Fort Collins, 1508 m, 20-III-1937, INHS; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 22-VI-1988, A, CSUC; at mouth of canyon nr Fort Collins, 1594 m, 16-VIII-1994, L, USGSNWQL; *Lone Pine Crk*, W of Livermore, 1819 m, 22-VI-1986, A, CSUC.

Remarks: This is possibly the most common ephemereid mayfly in Colorado (McCafferty et al. 1993) and the SPRB. Previously published records for Colorado were listed as *E. inermis* (Eaton). Jacobus and McCafferty (2003) reviewed the genus *Ephemerella* and considered *E. inermis* a new synonym of *E. excrucians* Walsh. Specimens were collected between 1508 m and 2440 m in elevation.

Ephemerella tibialis McDunnough 1924

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Records: COLORADO, **Boulder Co**, *Como Crk*, Little Royal Gorge 3.2 km E of CU Science Lodge, 2689 m, 1-VIII-1939, INHS; *4 Mile Crk*, nr Hwy 72, 2809 m, 28-VII-1998, A, CSUC; *Mid St Vrain Crk*, 2439 m, 30-VIII-2008, L, CSUC; (Ward and Berner 1980); **Clear Creek Co**, *Chicago Crk*, nr Idaho Springs, 2327 m, 4-VIII-1997, L, CSUC; *Cascade Crk*, 0.8 km upstrm from Hwy 103 SW of Idaho Springs, 2674 m, 2-VI-2007, L, CSUC; **Jefferson Co**, *Coal Crk*, Hwy 72 in Coal Crk Canyon, 2012 m, 25-VI-2004, L, A, CSUC; **Larimer Co**, *Big*

Thompson R, blw Moraine Park nr Estes Park, 2440 m, 8-VIII-1996, L, USGSNWQL; 17-VII-2002, L, USGSNWQL; RMNP 180 m SE of Bear Lake Rd, 2440 m, 15-VIII-1985, L, CSUC; *Glacier Crk*, RMNP, 2631 m, 17-VIII-1940, INHS; *Fall Crk*, 1.6 km W of Pingree Park, 2871 m, 11-IX-2007, L, CSUC; *Young Gulch*, Hwy 14 in Cache la Poudre Canyon at Ansel Watrous Cmpgrd, 1769 m, 6-VII-1991, A, CSUC; **Park Co**, *S Platte R*, nr Lake George, 2414 m, 8-VII-1938, INHS.

Remarks: A widespread, common species that occurs in both small and large streams across the west (McCafferty et al. 1993). Previously published records of this species were listed as *Serratella tibialis* until Jacobus and McCafferty (2008) revised the Ephemerellidae genera, providing the new combination *E. tibialis*. Specimens were collected from 1769 m to 2871 m in elevation. Adults were present in June and July.

Serratella micheneri (Traver) 1934

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Records: COLORADO, **Boulder Co**, *Left Hand Crk*, abv Pike Rd at Longmont, 1514 m, 7-VII-2003, L, USGSNWQL; *Mid Saint Vrain Crk*; (Ward and Berner 1980); **Larimer Co**, *Cache la Poudre R*, Fort Collins, 1524 m, 8-VIII-1990, A, CSUC; at LaPorte, 1541 m, 28-VIII-1990, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 14-IX-1986, A, CSUC; 29-VIII-1991, A, CSUC; Overland Trail Rd nr LaPorte, 1544 m, 28-VII-1987, A, CSUC; at mouth of canyon nr Fort Collins, 1594 m, 16-VIII-1994, L, USGSNWQL; 26-VIII-1993, L,

USGSNWQL; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 18-VII-1998, A, CSUC; 26-VII-1997, A, CSUC; dwnstrm of Halligan Res, 1928 m, 9-VIII-1997, L, CSUC; *County Canal #2*, just N of Bingham Hill Rd Fort Collins, 1536 m, 19-VI-2001, L.

Remarks: This widespread western North American mayfly prefers cool flowing water with gravel substrate (Allen and Edmunds 1963). McCafferty et al. (1993) also reported this species from Boulder County. Specimens were collected between 1514 m and 1928 m in elevation. Adults emerged July through September.

Timpanoga hecuba hecuba (Eaton) 1884

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Records: COLORADO, **Boulder Co**, *Boulder Crk*, at 55th St in Boulder, 1584 m, 11-VIII-1993, L, CSUC; *Dry Crk*, abv Baseline Rd nr Boulder, 1606 m, 30-VI-2003, L, USGSNWQL; Boulder Canyon, 1600 m, 11-IX-1977, L, CSUC; **Jefferson Co**, *Bear Crk*, at Corwina Park, 2050 m, 29-VIII-1981, L, CSUC; **Larimer Co**, *Big Thompson R*, Estes Park, 2313 m, 14-VIII-1940, INHS; *Buckhorn Crk*, small headwater stream, 1552 m, 22-IX-1986, L, CSUC; 14.4 km N of Masonville, 1888 m, 12-IX-2001, L, CSUC; 40 km N of Masonville, 2853 m, 12-IX-1990, L, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 4-IX-1989, L, CSUC; 8-IX-1999, A, CSUC; Upper Picnic Rock, 1602 m, 2-IX-1991, L, CSUC; *N Frk Cache la Poudre R*, Phantom

Canyon Preserve, 1627 m, 22-VII-2001, L, CSUC; **Weld Co**, *Saint Vrain Crk*, mouth nr Platteville, 1445 m, 25-VIII-1993, L, USGSNWQL.

Remarks: Larvae of this unique mayfly generally occur along the edges of medium to large streams in the foothills and lower montane regions in the western U.S. (Jensen 1966). This species was collected at elevations between 1445 m and 2853 m. Adults were present from late August through September.

Ephemeridae (Common Burrowing Mayflies)

**Ephemerella compar* Hagen 1875

No Figure

Records: COLORADO, "Foot-hills, Colorado", 1873, A, MCZC.

Remarks: *Ephemerella compar* was apparently endemic to the SPRB and should be considered extinct (McCafferty 1996); as it is known only from the adult type specimen (Hagen 1875, Edmunds and McCafferty 1984). Although the single adult specimen has a vague locality description as "Foot-hills, Colorado", it is presumed to have been collected in September within the SPRB based on the extent of the study area and other insects collected in the same survey (Edmunds and McCafferty 1984). *Ephemerella simulans* Walker is the only other *Ephemerella* species as far west as Colorado but is most assuredly not the same species (McCafferty 1996).

Hexagenia limbata (Serville) 1829

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Records: COLORADO, **Larimer Co**, *Cache la Poudre R*, at east end of Horsetooth Rd Fort Collins, 1510 m, 30-VII-2009, A, CSUC; *Horsetooth Res*, W LaPorte Ave Fort Collins, 1646 m, 2-IX-1994, A, CSUC; *Mail Crk*, Fort Collins, 1521 m, 11-VII-1989, A, CSUC; porch light Hwy 1 Fort Collins, 1583 m, 31-VIII-1991, A, CSUC; Rist Canyon, 4.8 km NW of Bellevue, 1707 m, 23-VIII-1989, A, CSUC; *Spring Crk*, Moore Park Fort Collins, 1510 m, 25-VII-1986, A, CSUC; *dried up crk*, opposite Rolland Park Fort Collins, 1510 m, 20-IV-1990, L, CSUC; *Heatheridge Condos*, Fort Collins, 1524 m, 27-VII-1979, A, CSUC; *LaPorte*, N of Fort Collins, 1544 m, 12-VII-1989, A, CSUC; **Sedgwick Co**, *Settlers Ditch*, at CR1 bridge, 1109 m, 10-IX-2000, L, CSUC; *S Platte R*, Julesburg SWA near Ovid, 1077 m, 20-VII-2007, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 27-VII-1946, INHS; 23-VI-2007, A, CSUC; rest area nr Hershey, 893 m, 7-VIII-2007, A, CSUC.

Remarks: *Hexagenia limbata* is the most widespread and common burrowing mayfly in North America (McCafferty 1994). It has colonized a wide array of water storage reservoirs associated with irrigation canal systems in the SPRB where larvae survive in wetted sections of irrigation canals during times of intermittent flow. This species may have occurred naturally in the eastern portion of the SPRB and moved westward through the extensive irrigation canal networks on plains portion of the SPRB. Emergence of this species can be remarkably large in lower elevations of the basin at North Platte, Nebraska.

Spieth (1941) reported *H. limbata* from Clear Creek in Colorado (no date) which is deposited at MCZC. Specimens were collected from 865 m to 1707 m in elevation. Adults emerged from July through September.

Heptageniidae (Flatheaded Mayflies)

Cinygmula mimus (Eaton) 1885

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Records: COLORADO, **Boulder Co**, *N Boulder Crk*, 2561 m (Dodds 1923, listed as *C. par*); **Douglas Co**, *Strontia Springs*, 1784 m, 30-IX-1927, A; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VII-1921, INHS; **Larimer Co**, *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 31-V-1986, A, CSUC; 24 km W of Masonville, 2067 m, 28-V-1991, A, CSUC; *Skin Gulch*, at Stove Prairie Rd, 1892 m, 8-V-1993, A, CSUC.

Remarks: *Cinygmula mimus* larvae are typically found in high gradient streams in the mountains and foothills of the SPRB, although Slater and Kondratieff (2004) provide the low elevation record in Douglas County. Slater and Kondratieff (2004) reviewed the genus and provided keys for adults of the Colorado species. Specimens were collected between 1784 m and 2704 m in elevation. Adults emerged May through July.

Cinygmula par Eaton 1885

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Records: COLORADO, **Larimer Co**, *Inn Brk*, at bridge nr Battle Crk cmpgrd RMNP, 3353 m, 19-VII-2008, L emerged 26-VII-2008, CSUC; *headwaters of S Frk Cache la Poudre R*, 3272 m, 22-IX-2002, A, CSUC.

Remarks: *Cinygmula par* is a high elevation headwater species. McCafferty et al. (1993) list a record from Buckhorn Creek in Larimer County and state that Dodds (1923) listed *C. mimus* (Eaton) as *C. par* from North Boulder Creek in Boulder County. Currently, there are no available diagnostic keys to distinguish larvae of *Cinygmula* (McCafferty et al. 1993). Specimens were collected between 3272 m and 3353 m in elevation. Reared larvae emerged in July and adults were collected in the field in September.

Cinygmula ramaleyi (Dodds) 1923

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Records: COLORADO, **Boulder Co**, *trib to Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, A, CSUC; *S Frk Mid Boulder Crk*, at Hessie, 3190 m, 12-IX-1998, A, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VIII-1921, INHS; VII-1915, INHS; **Larimer Co**, *Big Thompson R*, nr Windy Gulch RMNP, 2498 m, 10-IX-1993, A, CSUC; *trib to Buckhorn Crk*, 4 km W of Sheep Crk, 2115 m, 22-VI-1997, A, CSUC; *Cache la Poudre R*, 3097 m, 19-VIII-1976, A, CSUC; *Corral Crk*, Trailhead Long Draw Rd, 3060 m, 3-X-1993, A, CSUC; *Zimmerman Lake*, nr trailhead, 3198 m, 14-IX-1996, A, CSUC.

Remarks: Dodds (1923) originally described this species from South Boulder Creek near Tolland, Colorado. *Cinygmula* larvae can be common in high gradient streams at higher elevations from about 2115 m to 3198 m in the Colorado portion of the SPRB. Adults were collected from June through September.

**Cinygmula tarda* (McDunnough) 1929

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Records: COLORADO, **Park Co**, *S Frk S Platte R*, Knight-Imler SWA Hwy 285, 2802 m, 13-VIII-1996, A, CSUC.

Remarks: This is the only record of *C. tarda* in Colorado and the SPRB (Durfee and Kondratieff 1997) and appears to be the southeastern range limit of the species (Randolph 2002). This adult was present in August at 2802 m in elevation.

Ecdyonurus criddlei (McDunnough) 1927

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Records: COLORADO, **Boulder Co**, *Coal Crk*, abv McCaslin Rd at Superior, 1673 m, 26-VI-2003, L, USGSNWQL; *Mid Saint Vrain Crk*; *S Boulder Crk*, Hwy 36 bridge, 1633 m, 3-X-1995, A, CSUC; **Douglas Co**, *S Platte R*, Trumbull, 1932 m, 10-IX-1993, A, CSUC; **Larimer Co**, *Buckhorn Crk*, Rd 44H 3.2 km upstrm of Masonville, 1651 m, 16-IX-1998, A, CSUC; 13 km W of Masonville, 1856 m, 1-XI-1999, A, CSUC; 27- IX-1989, L, CSUC; 27-XI-1989, A, CSUC; 16 km N of Masonville, 1920 m, 6-IX-1995, A, CSUC; 19 km N of Masonville, 1953

m, 27-IX-1989, A, CSUC; 7-X-1987, A, CSUC; Roosevelt NF, 2011 m, 22-IX-1986, A, CSUC; 24 km NW of Masonville, 2067 m, 18-IX-1991, A, CSUC; 35.5 km N of Masonville, 2114 m, 22-IX-1986, A, CSUC; 2-X-1986, A, CSUC; *Cache la Poudre R*, Martinez Park Fort Collins, 1513 m, 1-VIII-1990, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 23-IX-1993, A, CSUC; 29-VIII-1991, A, CSUC; Hwy 14 6.5 km N of Hwy 287, 1618 m, 17-IX-1995, A, CSUC; *Lone Pine Crk*, Lone Pine SWA, 2884 m, 16-IX-1986, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 30-VII-1992, A, CSUC; 30-VIII-1997, A, CSUC; just blw Halligan Res, 1928 m, 9-VII-1997, L, CSUC; *Sheep Crk*, nr jct Buckhorn Crk, 2046 m, 15-IX-1996, A, CSUC; small spring fed stream, 2666 m, 29-VII-1986, A, CSUC; *Young Gulch*, Ansel Watrous Cmpgrd Hwy 14, 1769 m, 21-VII-1991, L, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.5 km S of Fairplay, 2840 m, 13-VIII-1995, A, CSUC; 21-V-1995, L, CSUC.

Remarks: This species is common in small streams in the foothills of the SPRB. McCafferty (2004) transferred *Nixe criddlei* into *Ecdyonurus*. Specimens were collected at elevations between 1513 m and 2666 m. Adults were collected from July through September.

Ecdyonurus simplicioides (McDunnough) 1924

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Records: COLORADO, **Boulder Co**, *Dry Crk*, abv Baseline Rd nr Boulder, 1606 m, 30-VI-2003, L, USGSNWQL; **Larimer Co**, *Big Thompson R*, gas

station light at Hwy 34 & 23H, 1571 m, 14-VII-1997, A, CSUC; *Cache la Poudre R*, Horsetooth Rd Fort Collins, 1473 m, 20-VII-1996, A, CSUC; Martinez Park Fort Collins, 1513 m, 10-VII-1990, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 14-IX-1986, A, CSUC; 29-VIII-1991, A, CSUC; *Fossil Crk*, just blw Lemay Ave Fort Collins, 1491 m, 10-VII-2000, A, CSUC; *irrigation canal*, CSU campus, 1524 m, 10-IX-1986, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 26-VII-1997, A, CSUC.

Remarks: This species seems to tolerate moderate siltation and low flows as it has been collected from irrigation canal networks associated with the transition zone of the SPRB in Colorado. McCafferty (2004) recently transferred *Nixe simplicoides* to *Ecdyonurus*. Specimens were collected from 1473 m and 1627 m in elevation. Adults were collected from July through September.

Epeorus albertae (McDunnough) 1924

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Records: COLORADO, **Boulder Co**, *Boulder Crk*, blw 61st St nr Boulder, 1569 m, 11-VII-2003, L, USGSNWQL; *Mid Saint Vrain Crk*; *S Saint Vrain Crk*, Hwy 7 W of Lyons, 1652 m, 28-VII-1998, A, CSUC; confl with N Saint Vrain Crk Bohn Park at Lyons, 1633 m, 25-VI-2003, A, CSUC; **Larimer Co**, *Big Thompson R*, 8 km blw Estes Park at Hwy 34, 2146 m, 25-VII-1997, A, CSUC; 30-VI-1997, L, CSUC; Sylvan Dale Ranch, 1585 m, 2-VIII-2008, A, CSUC; blw Moraine Park nr Estes Park, 2440 m, 8-VIII-1996, L, USGSNWQL; 13-IX-1995, L, USGSNWQL; *Buckhorn Crk*, CR 23, 1550 m, 13-V-2001, L; 35 km N of

Masonville, 2114 m, 22-IX-1986, A, CSUC; 32 km W of Fort Collins, 2565 m, 12-IX-1993, A, CSUC; *Cache la Poudre R*, Legacy Park in Fort Collins, 1512 m, 20-VII-2009, A, CSUC; abv WWTP Hwy 14, 1581 m, 18-VII-1989, A, CSUC; at Mouth of Canyon nr Fort Collins, 1594 m, 17-VII-1994, L, USGSNWQL; 16-VIII-1994, L, USGSNWQL; Picnic Rock access, 1629 m, 4-IX-1991, A, CSUC; *Sheep Crk*, Upper Cherokee Park, 2223 m, 15-VII-1991, A, CSUC.

Remarks: This species can be found in relatively warm streams (Edmunds and Allen 1964). Edmunds and Musser (1960) noted that *E. albertae* became more common than *E. longimanus* in Utah as water warmed at lower elevations in mountainous areas. This species was found at elevations from 1550 m to 2565 m. Adults were collected from May through September.

Epeorus deceptivus (McDunnough) 1924

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Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, 3200 m, 28-X-1975, L, CSUC; Camp Dick, 2608 m, 10-IX-1997, L, CSUC; *S Frk Mid Boulder Crk*, Hessie, 3190 m, 12-IX-1998, A, CSUC; **Larimer Co**, *Big Thompson R*, nr Windy Gulch RMNP, 2498 m, 10-IX-1993, A, CSUC; *Fall R*, 0.4 km E Endo Valley Picnic Area RMNP, 2637 m, 20-VIII-1985, L, CSUC; *Trap Lake*, Trap Lake trailhead, 2964 m, 7-VIII-1992, A, CSUC; *Zimmerman Lake*, 3198 m, 14-IX-1996, A, CSUC; **Park Co**, *4 Mile Crk*, CR 18 S of Fairplay, 3305 m, 23-IX-2003, A, CSUC.

Remarks: This western intermountain *Epeorus* species usually occurs at higher elevations than other *Epeorus* species (Edmunds and Allen 1964). Specimens were collected from 2498 m to 3305 m in elevation. Adults were present from August through October.

Epeorus longimanus (Eaton) 1885

Appendix A, page A26

Records: COLORADO, **Boulder Co**, *Boulder Crk*, blw 61st St nr Boulder, 1569 m, 11-VII-2003, L, USGSNWQL; *Long Lake*, outflow Stream, 3204 m, 8-IX-1990, A, CSUC; *Mid Saint Vrain Crk*; *N Saint Vrain Crk*, abv Buttonrock Res, 1904 m, 22-VIII-1984, A, CSUC; west of Lyons, 1702 m, 3-VII-1992, L, CSUC; *S Saint Vrain Crk*, 5 km W of Lyons Hwy 7, 1975 m, 16-IX-1986, A, CSUC; *small pond*, just W of Long Lake trailhead parking area W of Ward on Brainard Lake Rd, 3201 m, 29-VII-1994, A, CSUC; **Douglas Co**, *Jarre Crk*, 8 km SW of Sedalia on Hwy 67, 2070 m, 27-VI-2007, L, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VII-1921, INHS; **Jefferson Co**, *Coal Crk*, Hwy 72 in Coal Crk Canyon, 2012 m, 24-VI-2004, L, A, CSUC; **Larimer Co**, *Big Thompson R*, RMNP 180 m SE Bear Lake Rd, 2440 m, 3-VII-1985, L, CSUC; blw Moraine Park nr Estes Park, 2439 m, 17-VII-2002, L, USGSNWQL; 8-VIII-1996, L, USGSNWQL; *Cache la Poudre R*, 11.25 km blw State Fish Hatchery, 2441 m, 7-IX-1986, A, CSUC; Hwy 14 at Diamond Rock, 1820 m, 25-VIII-2006, L, CSUC; *S Frk Cache la Poudre R*, 63 E Rd at Fish Crk, 2534 m, 4-IX-1993, A, CSUC; *Glacier Crk*, abv Sprague Lake, 2646 m, 2-VIII-1988, A, CSUC; YMCA of the Rockies at Estes Park, 2435 m, 1-VII-2004, A, CSUC; Lower Hidden

Valley Picnic Area RMNP, 2927 m, 7-VIII-1995, A, CSUC; *Sheep Crk*, 0.8 km upstrm from Buckhorn Crk, 2046 m, 12-VII-1995, A, CSUC; Upper Cherokee Park, 2223 m, 15-VII-1991, A, CSUC; *Young Gulch*, at Ansel Watrous Cmpgrd Hwy 14 in Cache la Poudre Canyon, 1769 m, 6-VII-1991, L, CSUC; **Park Co**, *4 Mile Crk*, FR 421/CR 18 S of Fairplay, 3305 m, 29-VIII-2003, A CSUC; *Buckskin Crk*, FR 416 W of Alma, 3208 m, 28-VIII-2003, A, CSUC.

Remarks: A well-known and widespread species in the Rocky Mountains in small to medium sized streams. Edmunds and Allen (1964) and Flecker et al. (1988) studied the life history of *E. longimanus*. Ward (1976) reported this species from Douglas County, Colorado (McCafferty et al. 1993). Specimens were collected from 1569 m to 3208 m in elevation. Adults were present June through September.

Heptagenia elegantula (Eaton) 1885

Appendix A, page A27

Records: COLORADO, **Adams Co**, *Clear Crk*, nr mouth, 1585 m, 10-IX-1993, L, USGSNWQL; *Sand Crk*, Peoria St at Denver, 1615 m, 27-VIII-1993, L, USGSNWQL; **Boulder Co**, *Dry Crk*, Niwot Rd bridge, 1507 m, 24-III-2002, L, CSUC; *Mid Saint Vrain Crk*; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; **Gilpin Co**, *Boulder Crk*, at Tolland, 2705 m, VII-1915, INHS; **Jefferson Co**, *Big Dry Crk*, blw Hyland Creek at Westminster, 1609 m, 2-VII-2003, L, USGSNWQL; **Larimer Co**, *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; at Loveland, 1497 m, 16-IX-1993, L,

USGSNWQL; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 14-IX-1986, A, CSUC; Shields St Fort Collins, 1518 m, 14-X-1986, L, CSUC; *CSU campus*, Fort Collins, 1524 m, 20-VII-2008, A, CSUC; *Dry Crk*, at Hwy 287 at Loveland, 1523 m, 14-VII-2003, L, USGSNWQL; *Fossil Crk*, just dwnstrm from Lemay Ave S Ridge Golf Course in Fort Collins, 1491 m, 16-VII-1999, L, CSUC; 10-VII-2000, A, CSUC; *Mail Crk*, just upstrm Fossil Crk Fort Collins, 1495 m, 5-VII-2000, L, CSUC; Fort Collins, 1521, 13-VII-1990, A, CSUC; 2-VIII-1988, A, CSUC; *Spring Crk*, Roland Moore Park Fort Collins, 1510 m, 21-VII-1987, A, CSUC; Fort Collins 5100 Greenview Crt, 1521 m, 24-VIII-1991, A, CSUC; **Morgan Co**, *S Platte R*, at Cooper Bridge nr Balzac, 1261 m, 26-VII-1994, L, USGSNWQL; La Salle, 1408 m, 2-IX-1993, L, USGSNWQL; 27-VII-1993, L, USGSNWQL; Jean K. Tool SWA, 1266 m, 2-VI-2007, A, CSUC; **Park Co**, at Hartsel, 2703 m, 22-VII-1938, A, INHS; *Jefferson Crk*, 8 km NW of Jefferson, 3033 m, 2-IX-1999, L, CSUC; **Sedgwick Co**, *S Platte R*, at Julesburg, 1064 m, 22-VII-2007, A, CSUC; **Weld Co**, *Lonetree Crk*, at Carr, 1734 m, 20-VII-1993, L, USGSNWQL; *Lost Crk*, BLT 3.2 km N of Roggen, 1417 m, 5-VI-1993, A, CSUC; *Saint Vrain Crk*, mouth nr Platteville, 1445 m, 28-VII-1994, L, USGSNWQL; 7-IX-1995, L, USGSNWQL; *S Platte R*, 26.4 km E of Kersey CR 386, 1417 m, 13-VII-1993, A, CSUC; Brower SWA, 1408 m, 22-VII-2007, L, CSUC; nr Kersey, 1395 m, 15-VII-2002, L, USGSNWQL; *Sheep Crk*, 60th Ave & F St Greeley, 1430 m, 19-III-2002, L, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL; 7-VII-2007, CSUC; at Sutherland, 915 m, 1-XI-1962, L, INHS.

Remarks: Bednarik and Edmunds (1980) provided a key to the larvae and Webb et al. (2007) placed *Heptagenia diabasias* Burks, as a junior synonym of *H. elegantula* (Eaton). This synonymy bridges the eastern and western affinities of the previously separated species. This species can apparently tolerate siltation, low flows, variable water temperatures, and wide elevation ranges. McCafferty et al. (1993) also reported records from Jefferson, Boulder, and Gilpin Counties. It was collected at elevations from 865 m to 3033 m. Adults emerged July through September.

Heptagenia solitaria McDunnough 1924

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Records: COLORADO, **Jefferson Co**, *S Platte R*, Waterton Canyon, 1682 m, 2-I-1993, L, CSUC; **Larimer Co**, *Cache la Poudre R*, Lincoln Ave Bridge in Fort Collins, 1509 m, 22-IV-1991, L, CSUC; 8 km W Hwy 287, 1542 m, 25-IX-1990, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 4-X-2009, A, CSUC; 24-V-1987, A, CSUC; Watson Lake, 1559 m, 27-IX-1987, A, CSUC; at Mouth of Canyon nr Fort Collins, 1594 m, 16-VIII-1994 L, USGSNWQL; 13-IX-1995, L, USGSNWQL; Hwy 14 Upper Picnic Rock Access, 1602 m, 8-V-1993, A, CSUC; 4-IX-1991, A, CSUC; *Lone Pine Crk*, Lone Pine SWA, 2089 m, 28-IX-1990, L, CSUC.

Remarks: A widespread species in Colorado (McCafferty et al. 1993) and the western US (Bednarik and Edmunds 1980) that can be common in the foothills

region of the SPRB. Specimens were collected between 1509 m and 2089 m in elevation. Adults were collected from May through October.

**Maccaffertium mexicanum integrum* (McDunnough) 1924

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Records: NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 12-IX-1995, L, USGSNWQL; rest area nr Hershey, 893 m, 7-VIII-2007, A, CSUC.

Remarks: McCafferty et al. (2001) reported this species from Nebraska, and no doubt the above record is the furthest known western occurrence of this widespread eastern species. Specimens were collected at the east end of the SPRB from 865 m to 893 m in elevation. The adult collection was made in August.

**Macdunnoa persimplex* (McDunnough) 1929

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Records: COLORADO, **Larimer Co**, *Fort Collins*, at lights, 1508 m, 24-VII-1935; 23-VII-1935.

Remarks: This typically Midwestern species was collected from the SPRB in 1935 from the Cache la Poudre River at Fort Collins, Colorado (McCafferty et al. 1993). This species has probably been extirpated from the SPRB as no recent records are available. Additional study is needed to confirm its occurrence in Colorado.

Rhithrogena hageni Eaton 1885

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Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, *N Saint Vrain Crk*, Wild Basin RMNP, 2925 m, 18-VIII-1990, A, CSUC; *S Saint Vrain Crk*, 12.4 km W of Lyons Hwy 7, 1975 m, 16-IX-1986, A, CSUC; *S Boulder Crk*, just blw Gross Res, 2097 m, 15-VIII-1981, A, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VII-1921, INHS; **Larimer Co**, *Big Thompson R*, 180 m SE Bear Lake Rd RMNP, 2440 m, 3-VII-1985, L, CSUC; 1-VIII-1985, L, CSUC; Moraine Park RMNP, 2456 m, 10-VII-2000, A, CSUC; *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 31-V-1986, A, CSUC; 2-X-1986, L, CSUC; 24 km NW of Masonville, 2067 m, 4-VI-1991, A, CSUC; *Cache la Poudre R*, 19.3 km N of Rustic, 2376 m, 2-VIII-1990, A, CSUC; 11.2 km blw State Fish Hatchery, 2441 m, 7-IX-1986, A, CSUC; *Sheep Crk*, 0.8 km upstrm from Buckhorn Crk, 2046 m, 12-VII-1995, A, CSUC; Estes Park, 2299 m, 21-IX-1991, A, CSUC.

Remarks: *Rhithrogena hageni* is the common species of the genus in medium and large montane streams in Colorado (Flecker and Allan 1988) and the SPRB. This species was collected at elevations from 1975 m to 2925 m. Adults were present from May through September.

Rhithrogena robusta Dodds 1923

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Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, *N Saint Vrain Crk*, RMNP, 1870 m, 6-VII-1989, A, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland,

2704 m, VII-1921, INHS; *S Boulder Crk*, at Rollinsville, 2562 m, 19-VI-1986, L, CSUC; 3.2 km W of Tolland, 2779 m, 7-VII-1991, A, L, CSUC; **Larimer Co**, *Fall R*, 0.4 km E of Endo Valley Picnic Area RMNP, 2637 m, 26-VII-1985, L, CSUC; *The Loch*, blw The Loch RMNP, 3103 m, 1988, A, CSUC; *Inn Brk*, nr Battle Crk Cmpgrd, 3353 m, 20-VII-2008, A, CSUC.

Remarks: *Rhithrogena robusta* often co-occurs with *R. hageni* in the SPRB.

Dodds (1923) described this species from South Boulder Creek, Boulder County, Colorado. This species is probably more common than our records indicate. Specimens were collected from 1870 m to 3353 m in elevation. Adults were present in July.

**Rhithrogena undulata* (Banks) 1924

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Records: COLORADO, **Larimer Co**, *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 29-IX-1971, A, CSUC.

Remarks: An unusual record for this species as most records in Colorado are from west of the Continental Divide at higher elevations (McCafferty et al. 1993). This subimago emerged in late September. Male imagos are required to confirm this species presence in the SPRB.

**Stenacron interpunctatum* (Say) 1839

Appendix A, page A30

Records: COLORADO, **Sedgwick Co**, *S Platte R*, Julesburg SWA near Ovid, 1077 m, 20-VII-2007, A, CSUC; NEBRASKA, **Lincoln Co.** *S Platte R*, at North Platte, 865 m, 7-VII-2007, A, CSUC; 20-VIII-2007, A, CSUC.

Remarks: A common Midwestern species (Randolph and McCafferty 1998) reported in Colorado for the first time from the Republican River drainage in 2005 (Myers and Younghans 2005) and in the SPRB for the first time here. This species occurs on the plains in the eastern portion of the SPRB. These adult specimens were collected in July at elevations from 865 m to 1077 m.

Isonychiidae (Brushlegged Mayflies)

Isonychia rufa McDunnough 1931

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Records: COLORADO, **Larimer Co**, *Fort Collins*, at light, 1508 m, 1-VII-1989, A, CSUC; **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; **Weld Co**, *BLT*, no locality available, 1648 m, 27-VII-1987, A, CSUC; NEBRASKA, **Keith Co**, *S Platte R*, at Paxton, 933 m, 21-VII-2007, A, CSUC; **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 27-VII-1946, INHS; 7-VIII-2007, A, L, CSUC; rest area nr Hershey, 893 m, 7-VII-2007, A, CSUC.

Remarks: A Midwestern species that reaches its western distributional limit in Colorado near the foothills of the SPRB and can be common in the lower

Arkansas River in Colorado. Apparently, populations can be temporarily established through larval dispersal via irrigation canal networks along the Front Range of Colorado and the panhandle of Nebraska (McCafferty et al. 1993). Adults were present in July. Specimens were collected at elevations from 865 m to 1648 m.

Leptohyphidae (Little Stout Crawler Mayflies)

Tricorythodes explicatus (Eaton) 1892

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Records: COLORADO **Adams Co**, *Clear Crk*, nr Mouth, 1585 m, 10-IX-1993, A, USGSNWQL; *Sand Crk*, Peoria St at Denver, 1615 m, 27-VIII-1993, L, USGSNWQL; *S Platte R*, at Henderson, 1525 m, 7-IX-1995, L, USGSNWQL; 27-VIII-1993, L, USGSNWQL; **Boulder Co**, *Boulder Crk*, at 55th St in Boulder, 1583 m, 1-X-1999, L; 29-IX-1993, L; at 28th St in Boulder, 1613 m, 29-IX-1993, L; 22-IX-1998, L; at Broadway St in Boulder, 1630 m, 30-IX-1997, L; 22-IX-1998, L; at Canyon mouth in Boulder, 1656 m, 14-IV-1998, L; 22-IX-1998, L; *Left Hand Crk*, 81st St nr Niwot, 1387 m, 23-IX-1993, L, USGSNWQL; Pike Rd Longmont, 1515 m, 23-III-2002, L, CSUC; *Mid Saint Vrain Crk*; *S Boulder Crk*, at Baseline Rd, 1609 m, 26-IX-1996, L; 29-IX-1993, L; 13-IV-1995, L; Broadway St in Boulder, 1631 m, 23-IX-1998, L; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; *Cherry Crk*, Denver, 1577 m, 4-VIII-1993, L, USGSNWQL; between Broadway Ave and Bannock St, 1619 m, 31-VIII-1999, L, DDEH; dwnstrm of Stout St, 1588 m, 11-IX-1997, L, DDEH;

dwnstrm 14th St, 1587 m, 31-VIII-1999, L, DDEH; dwnstrm Bannock St, 1597 m, 10-IX-1997, L, DDEH; dwnstrm Market St, 1584 m, 11-IX-1999, L, DDEH; dwnstrm of Champa, 1588 m, 11-IX-1997, L, DDEH; *S Platte R*, Denver, 1577 m, 5-IX-1995, L, USGSNWQL; 26-VII-1993, L, USGSNWQL; **Douglas Co**, *Plum Crk*, nr Sedalia, 1682 m, 17-IX-1993, L, USGSNWQL; **Jefferson Co**, *Clear Crk*, at Golden, 1737 m, 24-VIII-1993, L, USGSNWQL; 11-VIII-1994, L, USGSNWQL; *S Platte R*, Cheesman Canyon, 1972 m, 15-XI-1992, A, CSUC; **Larimer Co**, *Big Thompson R*, CR 3, 1466 m, 21-V-2001, L; at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; at Loveland, 1497 m, 16-IX-1993, L, USGSNWQL; Taft Rd in Loveland, 1518 m, 11-V-2001, L; *Box Elder Crk*, Red Mountain Ranch 0.8 km N of huge dam, 1919 m, 29-VI-2007, L, CSUC; *Buckhorn Crk*, CR 23, 1550 m, 13-V-2001, L; *Cache la Poudre R*, upstrm Box Elder Crk nr Timnath, 1481 m, 22-IX-1993, L, USGSNWQL; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; Shields St bridge in Fort Collins, 1518 m, 5-IX-1996, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 15-X-1977, A, CSUC; 10-IX-2007, L, CSUC; at mouth of canyon nr Fort Collins, 1594 m, 13-IX-1995, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL; *Fossil Crk*, just dwnstrm of Lemay Ave S Ridge Golf Course Fort Collins, 1491 m, 10-VII-2000, A, CSUC; *Little Thompson R*, Hwy 287 Bridge, 1508 m, 24-IV-2000, A, CSUC; CR 44 nr Berthoud, 1475 m, 20-IX-1993, L, USGSNWQL; County Line Rd, 1508 m, 14-V-2001, L; CR 16E, 1517 m, 25-V-2001, L; *Mail Crk*, at Fort Collins, 1521 m, 3-IV-1988, A, CSUC; *N Frk Cache la Poudre R*, dwnstrm of Halligan Res, 1928 m, 9-VIII-1997, L, CSUC; 200 m upstrm from confl with

Cache la Poudre R, 1645 m, 3-III-2008, L, CSUC; **Logan Co**, *S Platte R*, Tamarack Ranch SWA, 1137 m, 20-VII-2007, L, CSUC; **Morgan Co**, *S Platte R*, at Cooper Bridge nr Balzac, 1261 m, 27-VII-1993, L, USGSNWQL; 11-IX-1995, L, USGSNWQL; nr Weldona, 1313 m, 30-IX-1993, L, USGSNWQL; **Sedgwick Co**, *Lodgepole Crk*, nr Ovid, 1076 m, 27-IX-1993, L, USGSNWQL; *S Platte R*, Julesburg SWA near Ovid, 1064 m, 20-VII-2007, 22-VI-2007, A, CSUC; **Weld Co**, *Cache la Poudre R*, nr Greeley, 1401 m, 28-IX-1993, L, USGSNWQL; *Lonetree Crk*, nr Greeley, 1411 m, 6-IX-1995, L, USGSNWQL; at Carr, 1734 m, 18-VII-1995, L, USGSNWQL; 20-VII-1993, L, USGSNWQL; *S Platte R*, nr Kersey, 1394 m, 6-IX-1995, L, USGSNWQL; 2-VIII-1993, L, USGSNWQL; nr La Salle, 1408 m, 2-IX-1993, L, USGSNWQL; at Fort Lupton, 1487 m, 24-IX-1993, L, USGSNWQL; *Saint Vrain Crk*, mouth nr Platteville, 1445 m, 7-IX-1995 L, USGSNWQL; 25-VIII-1993 L, USGSNWQL; NEBRASKA, **Keith Co**, *S Platte R*, at Paxton, 933 m, 21-VII-2007, A, CSUC; **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL; 23-VI-2007, A, CSUC.

Remarks: The well-known and widespread *T. minutus* (Eaton) (McCafferty et al. 1993, Wiersma and McCafferty 2000) was recently synonymized with *T. explicatus* (Baumgardner 2009). *Tricorythodes explicatus* is ubiquitous in North America, occurring in almost all low elevation lotic systems. This species can apparently tolerate substantial siltation and low flows. Specimens were collected from 865 m to 1972 m in elevation. Adults were present April to November.

Leptophlebiidae (Pronggilled Mayflies)

Choroterpes inornata Eaton 1892

Appendix A, page A32

Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk* (Ward and Berner 1980); **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; **Douglas Co**, *S Platte R*, at S Platte, 1859 m, 21-VII-1987, L, CSUC; **Larimer Co**, *Cache la Poudre R*, ELC in Fort Collins, 1488 m, 14-IX-1995, A, CSUC; Hwy 287 bridge Fort Collins, 1507 m, 5-IX-1987, L, CSUC; Shields St in Fort Collins, 1518 m, 16-IX-1986, L, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 14-IX-1986, A, CSUC; 29-VIII-1991, A, CSUC; *Lone Pine Crk*, CR 37 Bridge, 1798 m, 5-IX-1990, L, CSUC.

Remarks: This species is considered to reach its northern part of its range limit in Colorado and is generally associated with cool mountain streams (Allen and Murvosh 1987, McCafferty et al. 1993, Baumgardner et al. 1997, Baumgardner and Bowles 2005). Specimens were collected at elevations ranging between 1488 m and 1859 m. Adults were present in September.

Leptophlebia cupida (Say) 1823

Appendix A, page A32

Records: COLORADO, **Boulder Co**, *Little Thompson R*, N of Longmont at 83rd/CR23E St, 1560 m, 6-II-2010, L, CSUC; **Douglas Co**, *West Plum Crk*, Hwy 105, 1776 m, 3-III-2007, L, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VI-1921, INHS; **Larimer Co**, *Big Thompson R*, Hwy 34 and CR 23H, 1551

m, 9-VI-2003, A, CSUC; *Cache la Poudre R*, Fort Collins, 1507 m, 25-IV-1991, A, CSUC; 23-IV-1991, A, CSUC; at Lincoln Ave Bridge Fort Collins, 1508 m, 22-IV-1991, A, CSUC; Martinez Park Fort Collins, 1513 m, 8-IV-2000, A, CSUC; *Hewlett Gulch*, off Hwy 14 in Cache la Poudre Canyon, 1750 m, 10-III-1991, A, CSUC; *Little Thompson R*, Hwy 287, 1521 m, 24-IV-2000, A, CSUC; *Lone Pine Crk*, Lone Pine SWA, 2089 m, 23-III-1991, L, CSUC; *N Frk Cache la Poudre R*, 200 m upstrm from confl with Cache la Poudre R, 1645 m, 1-III-2008, L, CSUC.

Remarks: Larvae of this widespread North American mayfly commonly occur in leaves along margins of slow flowing streams and ins lakes (Burian 2001).

Specimens were collected from sites between 1507 m to 2089 m in elevation.

Adults were collected from March through June.

Paraleptophlebia debilis (Walker) 1853

Appendix A, page A33

Records: COLORADO, **Boulder Co**, *S Boulder Crk*, Hwy 36 Bridge, 1633 m, 3-X-1995, A, CSUC; **Larimer Co**, *Buckhorn Crk*, 19.3 km N of Masonville, 1953 m, 7-X-1987, A, CSUC; 35.4 km N of Masonville, 2114 m, 22-IX-1986, A, CSUC; 2-X-1986, A, CSUC; 32 km W of Fort Collins, 2565 m, 12-IX-1993, A, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 29-VIII-1991, A, CSUC; 3.2 km abv Mishawaka at tunnel, 1807 m, 4-X-0209, A, CSUC; *trib to Cache la Poudre R*, abv Long Draw Res, 2972 m, 2-IX-1995, A, CSUC; *Lone Pine Crk*, Lone Pine SWA, 2089 m, 28-IX-1990, L, A, CSUC; *N*

Frk Cache la Poudre R, Phantom Canyon Preserve, 1627 m, 30-IX-1993, A, CSUC; 23-VIII-2008, A, CSUC; Rd 74E, 1722 m, 7-IX-1996, A, CSUC; *Young Gulch*, Ansel Watrous Cmpgrd, 1769 m, 21-VII-1991, L, CSUC.

Remarks: A transcontinental North American species (Edmunds et al. 1976, McCafferty et al. 1993) associated with smaller montane and foothills streams of the SPRB that move to pool habitats prior to emergence (Harper and Harper 1986). Specimens were collected at elevations from 1544 m and 2972 m.

Adults emerged from August through October.

Paraleptophlebia heteronea (McDunnough) 1924

Appendix A, page A33

Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, *S Saint Vrain Crk*, 7.2 km upstream from Lyons, 1753 m, 25-VI-2003, A, CSUC; **Larimer Co**, *Big Thompson R*, Hwy 34 at Drake, 1875 m, 8-VII-1998, A, CSUC; *Cache la Poudre R*, Martinez Park Fort Collins, 1513 m, 7-V-1996, A, CSUC; 19-V-1998, A, CSUC; Hwy 14 Upper Picnic Rock Access, 1602 m, 8-V-1993, A, CSUC; *Sheep Crk*, 0.8 km upstrm from Buckhorn Crk, 2046 m, 12-VII-1995, A, CSUC; *Skin Gulch*, at Stove Prairie Rd, 1892 m, 8-V-1993, A, CSUC; *Glacier Crk*, YMCA of the Rockies Estes Park, 2435 m, 1-VII-2007, A, CSUC.

Remarks: This northwestern North American species inhabits small to medium sized streams and rivers (Harper and Harper 1986, Randolph 2002). It can be common in the foothills portion of the Cache la Poudre River and Big

Thompson River drainages. Specimens were collected at elevations between 1513 m and 2435 m. Adults were present May through July.

Paraleptophlebia memorialis (Eaton) 1884

Appendix A, page A34

Records: COLORADO, **Boulder Co**, *N Saint Vrain Crk*, (Ward and Berner 1980, Rader and Ward 1989); **Jefferson Co**, *Bear Crk*, at Corwina Park, 2050 m, 16-VII-1981, A, CSUC; **Larimer Co**, *Cache la Poudre R*, Fort Collins Martinez Park, 1513 m, 19-IV-1998, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 7-VII-1995, A, CSUC; *Big Thompson R*, CR 22H & CR 29, 1610 m, 16-VII-1997, A, CSUC; Hwy 34 at Drake, 1875 m, 8-VII-1998, A, CSUC.

Remarks: A widely distributed western North American species (Harper and Harper 1986, Allen and Murvosh 1987) that has been infrequently collected in the SPRB. Argyle and Edmunds (1962) reported this species as *Leptophlebia pallipes* Hagen in western Colorado. McCafferty et al. (1993) reported additional records from Larimer County; however, those records were based on larval identifications and may not be reliable (Rader and Ward 1989, Harper and Harper 1986). Specimens were collected between 1513 m and 2050 m in elevation. Adults were present April to July.

**Paraleptophlebia temporalis* (McDunnough) 1926

Appendix A, page A34

Records: COLORADO, **Teller Co**, *Rule Crk*, N of Woodland Park, 2436 m, 2-VIII-1987, A, CSUC.

Remarks: The above is the only known record in the SPRB for this northwestern North American species (Harper and Harper 1986, McCafferty 2008). This single adult specimen was collected in August at 2436 m in elevation.

Polymitarcyidae (Pale Burrowing Mayflies)

Ephoron album (Say) 1824

Appendix A, page A35

Records: COLORADO, **Larimer Co**, *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; 16-IX-1993, L, USGSNWQL; at Loveland, 1497 m, 16-IX-1993, L, USGSNWQL; *Cache la Poudre R*, Hwy 287 Bridge, 1507 m, 12-IX-1987, A, CSUC; Shields St in Fort Collins, 1518 m, 19-IX-1996, A, CSUC; *Irrigation Ditch*, Hwy 1 at mile marker 3.2, 1570 m, 19-IX-1991, L, CSUC; *Mail Crk*, Fort Collins, 1521 m, 29-VIII-1989, A, CSUC; *riparian area*, Terry Lake Rd Fort Collins, 1534 m, 4-IX-1991, A, CSUC; **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; NEBRASKA, **Keith Co**, *S Platte R*, at Paxton, 933 m, 21-VII-2007, A, CSUC; **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 7-VIII-2007, A, CSUC; at rest area nr Hershey, 983 m, 7-VIII-2007, A, CSUC.

Remarks: Larvae of this typically Midwestern and western North American burrowing mayfly can be common in warm plains streams (Phillips et al. 1994). *E. album* is one of a few mayfly species that females mate as subimagos (Britt 1962, Edmunds et al. 1956, Gibberson and Galloway 1985). Specimens were collected between 865 m and 1570 m in elevation. Adults were collected July to September.

Siphonuridae (Primitive Minnow Mayflies)

Siphonurus occidentalis (Eaton) 1885

Appendix A, page A35

Records: COLORADO, **Boulder Co**, *Caribou Bog*, Caribou Park, 2998 m, 5-VII-1988, A, CSUC; *Little Thompson R*, Hwy 287, 1521 m, 23-IV-2000, A, CSUC; *Roaring Frk*, 1.6 km E of Chasm Lake, 3344 m, 20-VII-2008, L, CSUC; **Douglas Co**, *Jarre Crk*, 8 km SW of Sedalia on Hwy 67, 2071 m, 27-VI-2007, A, CSUC; **Elbert Co**, *Kiowa Crk*, at Kiowa, 1932 m, 26-IV-1986, A, CSUC; at Elbert, 1932 m, 31-V-1986, L, CSUC; **Gilpin Co**, *S Boulder Crk*, at Tolland, 2704 m, VII-1915, INHS; **Larimer Co**, *Cache la Poudre R*, Martinez Park in Fort Collins, 1513 m, 7-V-1996, A, CSUC; 19-IV-2007, A, CSUC; at Lincoln Ave in Fort Collins, 1509 m, 22-IV-1991, A, L, CSUC; Bellevue, 1554 m, 10-V-1991, L, CSUC; *County Canal #2*, immediately N of Bingham Hill Rd Fort Collins, 1536 m, 19-VI-2001, L, CSUC; immediately W of Shields St Fort Collins, 1538 m, 20-VII-2001, L, CSUC; S of Horsetooth Rd Fort Collins, 1537 m, 29-VIII-2001, L, CSUC; *Moraine Prk*, RMNP, 2437 m, 9-VIII-1988, A, CSUC; *New*

Mercer Canal, immediately W of Shields Rd Fort Collins, 1537 m, 14-V-2001, L, CSUC; 19-VI-2001, L, CSUC; S of Horsetooth Rd, 1537 m, 30-VIII-2001, L, CSUC; immediately N of Bingham Hill Rd Fort Collins, 1530 m, 3-VI-2001, L, CSUC; 20-VI-2001, L, CSUC; *Lone Pine Crk*, W of Livermore, 1819 m, 22-VI-1986, A, CSUC; *Sheep Crk*, Cherokee Park, 2189 m, 25-VII-1991, A, CSUC; **Park Co**, *spring*, 45 m N of Burning Bear Cmpgrd, 2956 m, VIII-1986, A, CSUC.

Remarks: Larvae of this widespread western North American species often occur in slow streams and pools in a wide elevational distribution (Jensen 1966, Allen and Chao 1981, Harper and Harper 1997). Specimens were collected from 1509 m to 3344 m in elevation. Adults were present April to July.

Discussion (Ephemeroptera)

Eleven families, 34 genera and 69 species of mayflies (Table 1) are reported from nearly 1,300 mayfly records from 414 unique collection locations within the SPRB. The foothills transition zone was represented by the most number of records and the plains were represented by the least number of records. Nine currently valid mayfly species were originally described from the basin. Five families were represented by only one species, whereas the two most diverse families, Baetidae (18 species) and Heptageniidae (18 species), accounted for approximately 53 percent of the SPRB mayfly diversity. *Baetis tricaudatus* was the most commonly reported mayfly with 179 records. Other commonly reported mayflies were *Tricorythodes explicatus* with 99 records and *Fallceon quilleri* with 95 records. Surprisingly, the common and widespread

baetid mayfly *Callibaetis ferrugineus hageni* was reported from only 23 records in the SPRB.

Mayflies were reported from all elevations in the SPRB; 29 from the mountains, 59 from the foothills transition zone, and 17 from the plains (Table 2). *Baetis tricaudatus* displayed the widest elevational distribution from 1,077 m to 3,208 m. *Callibaetis ferrugineus hageni* also had a wide elevational distribution from 1,474 m to 3,096 m. Three species were reported from all three physiographic provinces and several appeared to have narrow elevational distributions. Some species that are common on the plains or in the mountains may find their ecological limits in the foothills which may partially explain the relatively high diversity of the foothills transition zone. Five mayflies are reported from only the plains and are typical western high plains species (McCafferty et al. 2001). Twenty-five species are reported from only the foothills transition zone. Four species are reported from only the mountains. One such species, *Ephemerella apopsis* McCafferty, is known from only one location in the world, Chasm Lake in RMNP (McCafferty 1992).

The number of adult mayfly species present in the SPRB was highest in July with 31 species followed by August with 26 species (Table 3). *Baetis tricaudatus* and *Callibaetis ferrugineus hageni* displayed the longest adult emergence period from March to August and April to September, respectively. No adult mayfly records were reported from November through February. Adult presence data was not established for 16 species due to lack of adult

collections, adult data from historic records, or species were identified only from larvae (Table 3).

This research recognizes seventeen mayfly species that require further investigation to understand their distribution within the SPRB (Table 11).

Stenacron interpunctatum, a species reported for the first time in the SPRB, was collected from Julesburg, Colorado near the South Platte River.

Rhithrogena undulata was reported in 1971 along the foothills transition zone near Fort Collins from a single subimago. Two mayflies, *Ephemera compar* and *Ephemerella apopsis*, are apparently endemic to Colorado and the SPRB known only from their original type material collected in 1873 and 1947, respectively. *Macdunnoa persimplex*, a Midwestern species, was collected in Fort Collins, Colorado in 1935 but has not been reported from the SPRB since. Interestingly, the one recently discovered species were reported from the plains in the eastern portion of the basin while the four historically present species were reported from further west in the foothills and mountains. Systematic field surveys targeting likely habitat are required to verify extant populations of these species. The likelihood of the historically present species being rediscovered in Colorado is small considering the extensive benthic sampling that has occurred in the state.

PLECOPTERA (STONEFLIES)

Capniidae (Small Winter Stoneflies)

**Capnia arapahoe* Nelson and Kondratieff 1988

Appendix B, page B2

Records: COLORADO, **Larimer Co**, *Elkhorn Crk*, Hwy 14 in Cache la Poudre Canyon 35.4 km W Fort Collins, 2012 m, 3-IV-1987, A, CSUC; 20-III-2009, A, CSUC; *Young Gulch*, abv Ansel Watrous Cmpgrd in Cache la Poudre Canyon, 1768 m, 22-III-1986, A, RWBC.

Remarks: The type locality of the Arapahoe Snowfly is a small tributary of the Cache la Poudre River in Larimer County, Colorado. Until March of 2009, this SPRB endemic species was only known from two male specimens (Nelson and Kondratieff 1988). Heinold and Kondratieff (in press) recently described the female from specimens from Elkhorn Creek. This species is currently under petition as an endangered species under the U.S. Endangered Species Act to protect their unique habitat from further development (Mazzacano 2007). Adults were present between March and April and were collected from 1768 m and 2012 m in elevation.

Capnia coloradensis Claassen 1937

Appendix B, page B2

Records: COLORADO, **Boulder Co**, *Central Gulch*, trib to S Saint Vrain Crk Hwy 7 W of Lyons, 1904 m, 4-IV-2003, A, CSUC; *Mid Boulder Crk*, at

Nederland, 2512 m, 4-IV-2003, A, CSUC; at City Gate abv Nederland across from High School, 2557 m, 4-IV-2003, A, CSUC; *S Saint Vrain Cr*, W of Lyons, 1970 m, 7-III-2004, A, RWHD; **Clear Creek Co**, *Chicago Crk*, 9 km from Idaho Springs Hwy 103, 2610 m, 18-III-2005, A, RWHD; *unnamed trib of S Clear Crk*, at Guanella Pass Cmpgrd nr Guanella Pass, 3294 m, 9-VII-2005, A, RWHD; 17-IV-2005, A, RWHD; **Gilpin Co**, *S Boulder Crk*, blw Rollinsville, 2562 m, 17-III-2004, A, CSUC; **Jefferson Co**, *Goose Crk*, at Goose Crk Cmpgrd, 2368 m, 4-IV-2004, A, RWHD; *trib to Elk Creek*, 16 km W of Golden, 2327 m, 13-IV-2008, A, CSUC; **Larimer Co**, *Buckhorn Crk*, nr Pennock Pass, 2526 m, 21-III-1986, A, CSUC; *Cache la Poudre R*, Hwy 14 Poudre Falls, 2523 m, 23-III-1999, A, CSUC; 0.8 km abv Poudre Falls, 2551 m, 22-III-1986, A, CSUC; *Big Thompson R*, just blw RMNP, 2422 m, 22-III-1997, A, CSUC; at Drake, 1875 m, 18-II-1943, INHS; *N Frk Big Thompson R*, approx 4 km upstrm of Drake, 1982 m, 6-III-2004, A, RWHD; *Trap Crk*, Hwy 14, 2801 m, 3-IV-1986, A, CSUC; **Park Co**, *Deer Crk*, abv Highland Park, 2782 m, 4-IV-2004, A, RWHD; 23-V-2004, A, RWHD.

Remarks: This common winter stonefly originally described from El Paso County, Colorado, is generally associated with streams and small rivers at higher elevations in the state (Baumann et al. 1977, Nelson and Baumann 1989). Adults were present between March and July. Specimens were collected from 1875 m and 3294 m in elevation.

Capnia confusa Claassen 1936

Appendix B, page B3

Records: COLORADO, **Boulder Co**, *Saint Vrain Crk*, nr Peaceful Valley, 2636 m, 12-V-1976, A, CSUC; Hwy 66 in Lyons, 1646 m, 23-IV-2005, A, CSUC; *N Saint Vrain Crk*, 4.3 km from Hwy 36 W of Lyons, 1842 m, 4-IV-2003, A, CSUC; *S Saint Vrain Crk*, Hwy 7 Big Narrows, 1856 m, 2-V-1993, A, CSUC; *S Boulder Crk*, Mesa Trailhead 2.7 km W of Hwy 93, 1759 m, 12-IV-1995, A, CSUC; **Clear Creek Co**, *Clear Crk*, blw Georgetown, 2808 m, 24-III-1997, A, CSUC; abv Lower Cabin Crk Res, 3059 m, 14-VI-2002, A, RWHD; *W Chicago Crk*, about 5 km upstrm of Idaho Springs, 2717 m, 14-VI-2002, A, RWHD; **Douglas Co**, *S Platte R*, Twin Cedars CR 67 and CR 40, 1892 m, 22-II-2009, A, CSUC; *Pine Crk*, 0.4 km upstrm from S Platte nr Nighthawk, 1907 m, 5-IV-2003, A, RWHD; *S Platte R*, N of Nighthawk, 1892 m, 18-III-2006, A, RWHD; **Jefferson Co**, *Goose Crk*, at Goose Crk Cmpgrd, 2368 m, 4-IV-2004, A, RWHD; *N Frk S Platte R*, at Pine Ranch Jefferson County Open Space nr Pine, 2103 m, 27-III-2005, A; *S Platte R*, at Deckers, 1950 m, 16-III-1986, A, CSUC; at Buffalo, 2009 m, 13-IV-1988, A, CSUC; **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 17-IV-2005, A, CSUC; YMCA of the Rockies Estes Park, 2437 m, 7-VI-2005, 24-IV-2005, A, CSUC; *Little Thompson R*, N of Longmont, 1521 m, 19-II-1943, INHS; *Buckhorn Crk*, jct *Sheep Crk*, 2046 m, 3-V-1997, A, CSUC; 32 km N of Masonville, 2033 m, 22-V-1987, A, CSUC; *Cache la Poudre R*, Martinez Park Fort Collins, 1513 m, 9-IV-2000, A, CSUC; 6.4 km abv Rustic, 2267 m, 14-IV-1990, A, CSUC; Lions Park in Fort Collins at

Overland Trail Rd, 1544 m, 8-IV-1987, A, CSUC; 3-IV-1993, A, CSUC; Poudre Canyon, 1627 m, 15-IV-1971, A, CSUC; blw State Fish Hatchery Hwy 14, 2337 m, 21-IV-1988, A, CSUC; *Elkhorn Crk*, Hwy 14 in Cache la Poudre Canyon 35.4 km W Fort Collins, 1975 m, 3-IV-1987, A, CSUC; *7 Mile Crk*, Hwy 14, 2183 m, 2-IV-1986, A, CSUC; *Fall R*, RMNP, 2598 m, 10-VI-1937, INHS; *Glacier Basin*, Estes Park, 2614 m, 10-VI-1937, INHS; *Sand Crk*, Red Mountain Ranch, 1868 m, 13-IV-2007, A, CSUC; **Park Co**, *Buckskin Crk*, FR 416 W of Alma, 3207 m, 10-VII-2003, A, CSUC; *Deer Crk*, abv Highland Park, 2782 m, 23-V-2004, A, RWHD; *Lost Crk*, Lost Creek Wilderness Area approx 4.8 km dwnstrm from trailhead, 2952 m, 13-VI-2004, A, RWHD; Lost Creek Wilderness Area nr to trailhead, 2977 m, 13-VI-2004, A, RWHD.

Remarks: This is one of the most common and widespread species of the genus *Capnia* (Kondratieff and Baumann 2002). It also has one of the latest emerging periods of winter stoneflies with females still present from February into July (Nelson and Baumann 1989). Records for this species were available from small high and low elevation streams ranging from 1319 m to 3207 m in elevation.

Capnia decepta (Banks) 1897

Appendix B, page B3

Records: COLORADO, **Arapahoe Co**, *S Platte R*, at Littleton, 1619 m, 13-II-1943, A, INHS; **Boulder Co**, *Central Gulch*, trib to *S Saint Vrain Crk* Hwy 7 W of Lyons, 1904 m, 4-IV-2003, A, CSUC; *Gregory Crk*, Gregory Canyon

Chautauqua Park in Boulder, 1771 m, 15-III-1998, A, CSUC; *4 Mile Crk*, at the confluence with *Boulder Crk*, 1749 m, 20-II-1943, INHS; *Little Thompson R*, N of Longmont, 1521 m, 19-II-1943, INHS; 18-II-1943, A, INHS; **Clear Creek Co**, *Duck Crk*, below Duck Lake near Guanella Pass, 3394 m, 29-VI-2003, A, RWHD; **Larimer Co**, *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 2-III-1990, A, CSUC; *Elkhorn Crk*, Cache la Poudre Canyon 35.4 km W Fort Collins, 2012 m, 3-IV-1987, A, CSUC; 6-III-2009, A, CSUC; *Hewlett Gulch*, off Hwy 14 in Poudre Canyon, 1728 m, 3-III-1991, A, CSUC; 9-II-1991, A, CSUC; *Indian Crk*, S of Masonville, 1598 m, 23-II-1986, A, CSUC; *N Frk Big Thompson R*, 4 km upstream of Drake, 1982 m, 6-III-2004, A, RWHD; *Buckhorn Crk*, near confluence with Fish Crk, 1832 m, 21-III-1986, A, CSUC; 8 km W of Masonville, 1833 m, 15-IV-2007, L, CSUC; *Redstone Crk*, in Redstone Canyon W of Fort Collins, 1625 m, 21-II-1986, A, CSUC; 2nd Bridge upstream, 1660 m, 24-I-1986, A, CSUC; *Sheep Crk*, at 44th Rd W of Fort Collins, 2010 m, 4-III-2007, A, RWHD; *Spring Crk*, Spring Crk Canyon, 1662 m, 11-III-1989, A, CSUC; 23-II-2008, L, CSUC; *Spring Canyon Dam*, Horsetooth Mountain Park, 1661 m, 16-VI-1989, A, CSUC; *Well Gulch*, Lory State Park, 1678 m, 10-III-1996, A, CSUC; *Young Gulch*, Cache la Poudre Canyon Hwy 14, 1769 m, 13-III-2005, A, CSUC; 15-II-1986, A, CSUC; 1.6 km upstream from Hwy 14, 1800 m, 9-III-2008, A reared, CSUC.

Remarks: This widespread species was described from Fort Collins in 1897 but has not been recently collected from that city. It is known from Mexico to Colorado (Nelson and Baumann 1989). A verified early record from 1943

collected from the South Platte River in Littleton, Colorado indicated that it was once present on the plains portion of the SPRB where it may also be locally extirpated. It can be common in small, higher elevation streams and can colonize intermittent streams in the foothills as well (Baumann et al. 1977). Adults were present between January and June. Specimens were collected at elevations between 1521 m and 3394 m.

Capnia gracilaria Claassen 1924

Appendix B, page B4

Records: COLORADO, **Boulder Co**, *Gregory Crk*, Gregory Canyon

Chautauqua Park in Boulder, 1771 m, 15-III-1998, A, CSUC; *Gillman Gulch*,

CR 94 upstrm Little James Crk, 2423 m, 1-VI-2005, A, CSUC; *Little James Crk*,

abv Jamestown, 19-IV-2005, 1932 m, A, CSUC; *trib to James Crk*, abv

Jamestown, 2287 m, 19-IV-2005, 1932 m, A, CSUC; **Clear Creek Co**, *Blue*

Crk, Hwy 40 nr Empire, 2859 m, 15-V-2005, A, RWHD; *Mill Crk*, at Dumont,

2430 m, 18-III-2005, A, RWHD; *unnamed trib of S Clear Crk*, at Guanella Pass

Cmpgrd nr Guanella Pass, 3294 m, 17-IV-2005, A, RWHD; **Jefferson Co**, *Bear*

Crk, abv Evergreen Golf Course nr Evergreen, 2188 m, 18-III-2005, A, RWHD;

Cub Crk, Cub Crk trailhead nr Conifer, 2555 m, 9-V-2004, A, RWHD; *Kennedy*

Gulch, at Reynolds Park 8 km from Conifer, 2229 m, 14-III-2004, A, RWHD; 28-

IV-2002, A, RWHD; *Maxwell Crk*, at Maxwell Falls Trailhead Arapaho NF, 2534

m, 3-IV-2004, A, L, RWHD; *Redskin Crk*, nr Buffalo Crk, 2319 m, 19-III-2004,

A, RWHD; *unnamed trib to N Turkey Crk*, at Flying J Ranch Open Space nr

Conifer, 2485 m, 17-V-2003, A, RWHD; 21-V-2004, A, RWHD; **Larimer Co**,

Lone Pine Crk, Rd 74E, 1842 m, 23-III-1997, A, CSUC; *Icy Brk*, blw The Loch RMNP, 3103 m, 16-III-1989, A, CSUC; 9-VI-1998, A, CSUC; *Loch Vale*, blw Timberline Falls RMNP, 3208 m, 5-VII-1988, A, CSUC; *Elkhorn Crk*, Hwy 14 35.4 km W Fort Collins, 2012 m, 3-IV-1987, A, CSUC; 6-III-2009, A, CSUC; 7 *Mile Crk*, off Hwy 14, 2183 m, 2-IV-1986, A, CSUC; 69 Rd and FR 225, 2261 m, 28-IV-2007, A, CSUC; *trib to Skin Gulch*, Rd 27 1.6 km abv Cache la Poudre R, 1931 m, 16-III-1991, A, CSUC; *Sheep Crk*, nr jct Buckhorn Crk, 2046 m, 24-IV-1995, A, CSUC; *Young Gulch*, Cache la Poudre Canyon Hwy 14, 1769 m, 1-III-2005, A, CSUC; 13-III-2005, A, CSUC; Hwy 14 Ansel Watrous Cmpgrd, 1769 m, 3-IV-1987, A, CSUC; 22-III-1986, A, CSUC; 1.6 km upstrm from Hwy 14, 1800 m, 9-III-2008, A reared, CSUC.

Remarks: A widespread western North American species associated with smaller, mid and high elevation streams in of Colorado (Baumann et al. 1977, Nelson and Baumann 1989). Adults were present between March and July. Specimens were collected at elevations between 1769 m and 3294 m.

**Capnia vernalis* (Newport) 1848

Appendix B, page B4

Records: COLORADO, **Arapahoe Co**, *S Platte R*, at Littleton, 1619 m, 13-II-1943, INHS; **Douglas Co**, *S Platte R*, at Deckers, 1950 m, 7-II-1986, A, CSUC; at Twin Cedars CR 67 and CR 40, 1892 m, 23-II-2009, CSUC.

Remarks: This winter stonefly is associated with large, lower elevation streams that are often silty. It was not reported for more than 20 years in the SPRB until

February of 2009. It may have once been common in the larger tributaries of the South Platte River on the plains and lower foothills and has probably been extirpated from the main stem South Platte River at Littleton, Colorado. It is still common in the Colorado River drainage on the West Slope. Specimens were collected at elevations between 1619 m and 1950 m. Adults were present in February.

Capnura wanica (Frison) 1944

Appendix B, page B5

Records: COLORADO, **Boulder Co**, *Little Thompson R*, N of Longmont, 1521 m, 19-II-1943, INHS; **Douglas Co**, *Cherry Crk*, Franktown Hwy 86, 1857 m, 8-II-1987, A, CSUC; 7-II-2004, A, RWHD; *W Cherry Crk*, Hwy 83 3.2 km SE of Castlewood Canyon State Park, 1992 m, 22-III-1987, A, CSUC; 4-III-2006, A, RWHD; *E Plum Crk*, just S of Castle Rock, 1906 m, 16-II-2003, A, CSUC; 7-II-2004, A, RWHD; *Plum Crk*, at Sedalia, 1746 m, 13-II-1943, A, INHS; Louviers Rd btwn Louviers and Kellytown, 1723 m, 17-II-2003, A, CSUC; Titan Rd nr Kellytown, 1720 m, 22-II-2009, A, CSUC; *W Plum Crk*, Tall Horse Trail Rd, 1863 m, 17-II-2003, A, CSUC; Jackson Crk Rd, 1850 m, 17-II-2003, A, CSUC; Hwy 67 bridge nr Sedalia, 1766 m, 7-II-2004, A, RWHD; 16-II-2003, A, RWHD; *W Cherry Crk*, Hwy 83, 2047 m, 17-II-2003, A, CSUC; *S Platte R*, Twin Cedars CR 67 and CR 40, 1892 m, 22-II-2009, A, CSUC; **Elbert Co**, *Wolf Crk*, 1.6 km E of jct Rd 178 & Rd 45-49, 1791 m, 8-II-1987, A, CSUC; *Kiowa Crk*, Kiowa Hwy 86, 1947 m, 8-II-1987, A, CSUC; *Running Crk*, Hwy 86 Bridge in Elizabeth, 1965 m, 7-II-2004, A, RWHD; **Larimer Co**, *Boxelder Crk*, Red

Mountain ranch Open Space, 1988 m, 23-II-2007, A, CSUC; *Elkhorn Crk*, Hwy 14 35 km W of Fort Collins, 1976 m, 26-III-1988, L, CSUC; 6-III-2009, A, CSUC; *Hewlett Gulch*, Hwy 14 Poudre Canyon, 1728 m, 9-II-1991, A, CSUC; *Indian Crk*, S of Masonville, 1598 m, 23-II-1986, A, CSUC; *Little Thompson R*, N of Longmont Hwy 287, 1521 m, 19-II-1943, A, INHS; CR 17 SW of Berthoud, 1517 m, 24-I-1986, A, CSUC; 9-I-2000, A, CSUC; Rd 27E W of Berthoud, 1583 m, 17-II-2002, L, CSUC; Rd 15A bridge S of Berthoud, 1508 m, 17-II-2002, L, CSUC; *Redstone Crk*, 1st bridge, 1626 m, 17-II-1986, A, CSUC; 2nd bridge upstrm, 1660 m, 24-I-1986, A, CSUC; 4.3 km from CR 23, 1660 m, 24-I-1986, A, CSUC; *Young Gulch*, Ansel Watrous Cmpgrd, 1769 m, 15-II-1986, L, CSUC; *Stonewall Crk*, Hwy 287, 1811 m, 15-I-1995, L, CSUC; WYOMING, **Laramie Co**, *Lodgepole Crk*, Rd 120-1, 1829 m, 27-II-2000, A, CSUC.

Remarks: This species was described the Little Thompson River near Berthoud, Colorado. Populations are known from small streams in the lower foothills eastward to Interstate 25 along the western portion of the Great Plains in Colorado and Wyoming (Nelson and Baumann 1989, Kondratieff and Baumann 2002). This species is also common in the Cherry Creek drainage upstream of Denver. Historically, it is likely *C. wanica* previously existed in the Denver metropolitan area and in other currently urbanized transitional zone streams along the Front Range. Specimens were collected at elevations from 1508 m to 2047 m. Adults were present January through March.

Eucapnopsis brevicauda Claassen 1924

Appendix B, page B5

Records: COLORADO, **Boulder Co**, *James Crk*, 94 Rd at Jamestown, 1951 m, 1-VI-2005, A, CSUC; 102J Rd at Ward Rd in Jamestown, 1951 m, 1-VI-2005, A, CSUC; *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; Camp Dick abv Peaceful Valley, 2608 m, 4-VII-1999, A, CSUC; 9-VII-1999, A, CSUC; *Boulder Crk*, at Broadway in Boulder, 1630 m, 1-X-1999, L; 30-IX-1997, L; at Canyon mouth in Boulder, 1656 m; 1-X-1999, L; 30-IX-1997, L; *Mid Boulder Crk*, nr Castle Rock, 2317 m, 14-III-2006, L, CSUC; *Gillman Gulch*, off CR 94 upstrm jct Little James Crk, 1-VI-2005, 2423 m, A, CSUC; **Clear Creek Co**, *Cascade Crk*, Rd 44h and Cascade Crk Rd, 2620 m, 34-V-2004, A, CSUC; **Larimer Co**, *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 21-V-1987, A, CSUC; *S Frk Cache la Poudre R*, B. Simpson house, 1993 m, 14-VI-1986, A, CSUC; *Big Thompson R*, 180 m upstrm from Cub Crk Trail Bridge RMNP, 2470 m, 10-V-1993, L, CSUC; *Glacier Basin*, Estes Park, 2614 m, 10-VI-1937, A, INHS; **Park Co**, *Lost Crk*, Lost Crk Wilderness Area Pike NF close to trailhead, 2977 m, 13-VI-2004, A, RWHD.

Remarks: The type locality for this species is Boulder, Colorado (Claassen 1924). This widespread western North American species emerges later than other *Capnia* species (Kondratieff and Baumann 2002). Adults in the SPRB were present in May and June. Specimens were collected between 1630 m and 2977 m in elevation.

**Isocapnia hyalita* Ricker 1959

Appendix B, page B6

Records: COLORADO, **Clear Creek Co**, *Hoop Crk*, Hwy 40 W of Empire, 2638 m, 15-V-2005, A, RWHD.

Remarks: This is the only known SPRB record of this more northern Rocky Mountain species. It has been reported in two other populations in Colorado just west of the Continental Divide (Kondratieff and Baumann 2002). It was collected from a cold, high gradient stream typical of *Isocapnia* (Zenger and Baumann 2004).

**Mesocapnia frisoni* (Baumann and Gaufin) 1970

Appendix B, page B6

Records: COLORADO, **Boulder Co**, *Little Thompson R*, N of Longmont at 83rd/CR23E St, 1560 m, 9-II-2008, A, CSUC; 31-I-2010, A, CSUC; **Larimer Co**, *Little Thompson R*, SE of Berthoud at Rd 6C, 1502 m, 24-I-2000, A, CSUC; S of Berthoud Rd 15, 1508 m, 24-I-2000, A, CSUC; CR 17 W of Berthoud, 1517, 24-I-1986, A, CSUC; 17-II-2002, A, CSUC; Hwy 287, 1521 m, 15-II-2003, A, RWHD; 19-II-1943, A, INHS; Rd 27E W of Berthoud, 1583, 17-II-2002, A, CSUC.

Remarks: One of the two known Colorado localities for *M. frisoni* is within the SPRB. It is important to note that the only stream this species is known from in the SPRB is the Little Thompson River just southwest of Berthoud, Colorado. Presumably, *M. frisoni* occurred in other suitable streams along the Front

Range of Colorado. Jacobi and Cary (1996) discussed the life history of *M. frisoni* from streams in New Mexico. Specimens were collected between 1502 m and 1583 m in elevation. Adults were collected between January and March.

**Paracapnia angulata* Hanson 1961

Appendix B, page B7

Records: COLORADO, **Larimer Co**, *Dale Crk*, Hwy 287, 2059 m, 1-IV-1994, L, CSUC; 26-IV-1992, A, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 20-III-2001, A, CSUC.

Remarks: *Paracapnia angulata* is a common eastern North American species that occurs in the SPRB and the Western Slope of Colorado (Kondratieff and Baumann 2002, Stark and Baumann 2004, Zuellig et al. 2006). SPRB records were available from the Cache la Poudre River and one of its tributaries in Larimer County, Colorado. Specimens were collected between 1544 m and 2059 m in elevation. Adults were collected between March and April.

Utacapnia logana (Nebeker and Gaufin) 1965

Appendix B, page B7

Records: COLORADO, **Clear Creek Co**, *Chicago Crk*, 9 km from Idaho Springs Hwy 103, 2610 m, 18-III-2005, A, RWHD; *Soda Crk*, nr Idaho Springs, 2302 m, 18-III-2005, A, RWHD; **Douglas Co**, *S Platte R*, Twin Cedars at CR 67 and CR 40, 1892 m, 22-II-2009, A, CSUC; **Larimer Co**, *Cache la Poudre R*, Hwy 14 at Poudre Falls, 2523 m, 23-III-1999, L, CSUC; 0.8 km abv Poudre Falls, 2551 m, 22-III-1986, A, CSUC; *Big Thompson R*, just blw RMNP, 2422

m, 22-III-1997, A, CSUC; *Buckhorn Crk*, nr confl with Fish Crk, 1832 m, 23-II-1986, A, CSUC; *Elkhorn Crk*, 35 km W of Fort Collins off Hwy 14 Poudre Canyon, 1975 m, 16-II-1991, A, CSUC; *Sheep Crk*, nr Buckhorn Crk, 2046 m, 24-IV-1995, L, CSUC; *N Frk Big Thompson R*, 6.2 km upstrm of Drake at CR 43, 2033 m, 11-III-2003, A, CSUC; 4 km upstrm of Drake, 1982 m, 6-III-2004, A, RWHD; *Sand Crk*, Red Mountain Ranch Open Space in Haygood Canyon N of 23 Rd, 1988 m, 23-II-2007, A, CSUC.

Remarks: Populations of this uncommonly collected Colorado species typically occur in the larger tributaries of the Cache la Poudre River and the Big Thompson River drainages at higher elevations (Baumann et al. 1977, Kondratieff and Baumann 2002). The short winged males are easily distinguished on snow in March and April. Specimens were collected at elevations ranging from 1982 m to 2610 m.

Chloroperlidae (Green Stoneflies)

Alloperla pilosa Needham and Claassen 1925

Appendix B, page B8

Records: COLORADO, **Boulder Co**, *N Frk Mid Boulder Crk*, Arapaho Pass Trail, 3087 m, 28-VII-1995, A, CSUC; *Roaring Frk*, outlet of Chasm Lake blw Peacock Pool RMNP, 3430 m, 19-VII-2009, A, CSUC; **Larimer Co**, *Icy Brk*, blw Timberline Falls RMNP, 3208 m, 5-VII-1988, A, CSUC; RMNP, 3030 m, 3-VI-1990, A, INHS; *Hidden Valley Crk*, RMNP, 2690 m, 25-VII-1938, A, INHS, S

Frk Cache la Poudre R, Mummy Pass, 3415 m, 21-IX-2003, A, CSUC; *Inn Brk*, 1.6 km NE Chasm Lake RMNP, 3391 m, 19-VII-2008, A, CSUC.

Remarks: Adults of this uncommonly reported stonefly are lime green with a distinctive black dorsal abdominal stripe. *Alloperla pilosa* appears to be restricted to small high elevation headwater streams of the Southern Rocky Mountains (Baumann and Kondratieff 2008a). Stark et al. (1973) also report this species in Colorado from Boulder County, Larimer County at Cameron Pass, and Clear Creek County east of Berthoud Pass. Specimens were collected between 2690 m and 3430 m in elevation. Adults were collected in June to September.

**Alloperla thalia* Ricker 1952

Appendix B, page B8

Records: COLORADO, **Larimer Co**, *Sheep Crk*, Upper Cherokee Park, 2223 m, 15-VII-1991, A, CSUC.

Remarks: This species is reported in the SPRB from one tributary of the Cache la Poudre River but is more common in the Northern Rockies north to Alaska. Baumann and Kondratieff (2008a) recently separated *A. thalia* from *A. severa*, which was the only *Alloperla* species previously listed from Colorado (Kondratieff and Baumann 2002).

Paraperla frontalis (Banks) 1902

Appendix B, page B9

Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; Camp Dick abv Peaceful Valley, 2608 m, 4-VII-1997, A, CSUC; *Boulder Creek*, at Broadway Ave in Boulder, 1630 m, 15-IV-1997, L; 1-X-1999, L; at Canyon mouth in Boulder, 1656 m, 3-X-1996, L; 1-X-1999, L; at 28th St in Boulder, 1613 m, 30-IX-1997, L; 15-IV-1997, L; at 55th St in Boulder, 1583 m, 15-IV-1997, L; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, L, CSUC; **Larimer Co**, *Big Thompson R*, RMNP, 2441 m, 17-VIII-1940, A, INHS; Estes Park, 2313 m, 14-VIII-1940, INHS; *Fall R*, Estes Park, 2304 m, 17-VIII-1940, A, INHS; *Milner Pass*, RMNP, 3270 m, 22-VIII-1939, INHS.

Remarks: Larvae of this species are distinctly hyporheic and are rarely encountered until near adult emergence; adults are also rarely collected (DeWalt and Stewart 1995). In the SPRB, adults were reported in July and August. Specimens were collected between 1583 m and 3270 m in elevation.

Plumiperla diversa (Frison) 1935

Appendix B, page B9

Records: COLORADO, **Boulder Co**, *N Saint Vrain Crk*, Wild Basin RMNP, 2925 m, 18-VIII-1990, L, CSUC; blw Thunder Lake, 3227 m, 6-VII-1989, A, CSUC; blw Buttonrock Dam, 1914 m, 22-VIII-1984, A, CSUC; *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; **Clear**

Creek Co, *Chicago Crk*, at Chicago Frks Cmpgrd, 2816 m, 30-VII-1998, A, CSUC; *Clear Crk*, at Silver Plume, 2789 m, 23-VII-1938, A, INHS; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, A, CSUC; Rollinsville Hwy 119, 2562 m, 2-VII-1995, A, CSUC; **Larimer Co**, *Chasm Falls*, RMNP, 2773 m, 27-VII-1938, A, INHS; *Trap Lake*, Trap Lake trailhead, 2964 m, 7-VIII-1992, A, CSUC; *Fall R*, Horseshoe Park RMNP, 2598 m, 2-VII-2008, A, CSUC; **Park Co**, *4 Mile Crk*, FR 421/CR 18 S of Fairplay, 3304 m, 10-VII-2003, A, CSUC.

Remarks: A common Western North American species usually restricted to small, higher elevation streams (Kondratieff and Baumann 2002). Specimens were collected between 1914 m and 3304 m in elevation. Adults were present July through August.

Suwallia pallidula (Banks) 1904

Appendix B, page B10

Records: COLORADO, **Boulder Co**, *James Crk*, 1.5 km S of Jamestown, 1890 m, 20-IX-2005, A, CSUC; at Jamestown, 1951 m, 2-IX-2005, A, CSUC; *Mid Saint Vrain Crk*, Camp Dick abv Peaceful Valley, 2608 m, 4-VII-1997, A, CSUC; *N Saint Vrain Crk*, abv Buttonrock Res, 1914 m, 22-VIII-1984, A, CSUC; 30-VIII-1986, A, CSUC; *S Boulder Crk*, Mesa Trailhead W of Hwy 93, 1759 m, 3-X-1995, A, CSUC; Eldorado Springs, 1759 m, 7-VIII-1973, A, INHS; **Clear Creek Co**, *Clear Crk*, bridge at W end of Idaho Springs, 2314 m, 10-VIII-1985, A, CSUC; just blw Idaho Springs, 2280 m, 10-VIII-2003, A, RWHD; *W*

Frk Clear Crk, Hwy 40 W of Empire upstrm from Blue Crk, 2901 m, 9-VII-2003, A, CSUC; **Douglas Co**, *West Crk*, 2277 m, 5-VII-1941, A, INHS; **Larimer Co**, *Big Thompson R*, blw Moraine Park RMNP, 2437 m, 29-IX-2005, A, CSUC; RMNP, 2441 m, 17-VIII-1940, INHS; at Estes Park, 2314 m, 14-VIII-1940, INHS; *Fall R*, Lawn Lake Trailhead RMNP, 2598 m, 22-VII-1987, A, CSUC; at Estes Park, 2304 m, 15-VIII-1940, A, INHS; *Glacier Crk*, YMCA of the Rockies Estes Park, 2435 m, 8-X-2004, A, CSUC; RMNP, 2631 m, 17-VIII-1940, A, INHS; 0.8 km SW of Sprague Lake RMNP, 2646 m, 2-VIII-1988, A, CSUC; Estes Park, 2314 m, 10-VIII-1919, A, INHS; *Milner Pass*, RMNP, 3270 m, 22-VIII-1939, A, INHS; *7 Mile Crk*, FR 225 and CR 69, 2261 m, 25-VIII-2006, A, CSUC; **Teller Co**, *Mitchell Crk*, Mitchell Crk Trailhead, 3199 m, 22-VIII-1996, A, CSUC; *Rule Crk*, nr Woodland Park, 2436 m, 4-VIII-1987, A, CSUC.

Remarks: This may be the most common species of *Suwallia* associated with medium sized streams in Colorado and is apparently more tolerant of warm water than other *Suwallia* species (Alexander and Stewart 1999, Kondratieff and Baumann 2002). Adults were present between July and October. Specimens were collected between 1759 m and 3270 m in elevation.

Suwallia starki Alexander and Stewart 1999

Appendix B, page B10

Records: COLORADO, **Larimer Co**, *Big Thompson R*, nr Windy Gulch RMNP, 2498 m, 10-IX-1993, A, CSUC; *Cache la Poudre R*, Sleeping Elephant Cmpgrd, 2384 m, 1-IX-1991, A, CSUC; *S Frk Cache la Poudre R*, 63 E Rd at

Fish Crk, 2534 m, 4-IX-1993, A, CSUC; 5.5 km WNW of Box Prairie, 2520 m, 11-IX- 2007, A, CSUC; *Fall Crk*, 1.6 km west of Pingree Park, 2871 m, 11-IX-2007, A, CSUC; Cirque Meadow, 2988 m, 11-IX-2007, A, CSUC.

Remarks: This recently described species, previously confused with *S. pallidula*, is possibly the most widespread North American *Suwallia* species (Alexander and Stewart 1999). In the SPRB, it was collected from a high, relatively limited elevational range from 2384 m to 2988 m. Adults were present in September.

**Suwallia wardi* Kondratieff and Kirchner 1991

Appendix B, page B11

Records: COLORADO, **Larimer Co**, *small strm*, Ben Delatour Scout Ranch, 2289 m, 21-VI-1990, A, CSUC; **Park Co**, *Tarryall Crk*, Hwy 285 nr Como, 2950 m, 8-VIII-1973, A, RWBC.

Remarks: The Larimer County record is the original type locality (Kondratieff Kirchner 1991). The only other SPRB record known was reported by Alexander and Stewart (1999) collected by Baumann and Stark in 1973 from a high elevation site in the southern portion of the basin. This species is often associated with high elevation springs (Alexander and Stewart 1999). Adults were present in June and August. Specimens were collected between 2289 m and 2950 m in elevation.

Sweltsa borealis (Banks) 1895

Appendix B, page B11

Records: COLORADO, **Boulder Co**, *4 Mile Crk*, nr Hwy 72, 2792 m, 28-VII-1998, A, CSUC; *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; Camp Dick abv Peaceful Valley, 2608 m, 4-VII-1997, A, CSUC; *trib to Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, A, CSUC; **Clear Creek Co**, *unnamed trib of S Clear Crk*, at Guanella Pass Cmpgrd nr Guanella Pass, 3294 m, 4-IX-2006, A, RWHD; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, A, CSUC; *spring*, along Rollins Pass Rd 3.2 km E of E Portal, 2722 m, 10-VII-1994, A, CSUC; **Larimer Co**, *Icy Brk*, abv The Loch RMNP, 3103 m, 2-VIII-1988, A, CSUC; *Chiquita Crk*, RMNP, 2682 m, 27-VII-1938, A, INHS; *Chasm Falls*, RMNP, 2773 m, 27-VII-1938, A, INHS; *Alpine Brk*, Goblins Forest Cmpgrd RMNP, 3033 m, 8-VII-2008, A, CSUC; **Park Co**, *4 Mile Crk*, FR 421/CR 18 S of Fairplay, 3304 m, 10-VII-2003, A, CSUC; *Buckskin Crk*, FR 416 W of Alma, 3207 m, 10-VII-2003, A, CSUC; 9-VIII-2003, A, CSUC; *Deer Crk*, abv Highland Park, 2782 m, 23-V-2004, A, RWHD; *S Frk S Platte R*, just blw Weston Pass Cmpgrd Pike NF, 3051 m, 12-VI-2004, A, RWHD.

Remarks: This species is common in small, high elevation streams in the SPRB and often co-occurs with *S. coloradensis*. Adults were present June through September. Specimens were collected between 2608 m and 3304 m in elevation.

Sweltsa coloradensis (Banks) 1898

Appendix B, page B12

Records: COLORADO, **Boulder Co**, *N Saint Vrain Crk*, at Buttonrock Dam, 1956 m, 30-VI-1986, A, CSUC; *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; 4-VII-1997, A, CSUC; Camp Dick Access Rd just off of Hwy 72, 2634 m, 25-VI-2003, A, CSUC; *S Saint Vrain Crk*, Hwy 7 7.2 km up from Hwy 36, 1753 m, 25-VI-2003, A, CSUC; N of Ward, 2652 m, 12-VII-1944, A, INHS; *Mid Boulder Crk*, E of Nederland, 2303 m, 5-VI-1954, A, INHS; **Clear Creek Co**, *Clear Crk*, CR 306 I-70 exit 232, 2535 m, 9-VII-2003, A, CSUC; *spring*, 0.4 km blw Georgetown Water Supply Res, 2810 m, 10-VIII-1985, A, CSUC; *Chicago Crk*, at Idaho Springs, 2345 m, 29-VI-2005, A, CSUC; *Clear Crk*, at Dumont, 2437 m, 29-VI-2005, A, CSUC; **Gilpin Co**, *S Boulder Crk*, Rollinsville Hwy 119, 2562 m, 2-VII-1995, A, CSUC; 19-VI-1986, A, CSUC; **Larimer Co**, *Beaver Crk*, 2743 m, 15-VII-1991, A, CSUC; *Big Thompson R*, 8 km blw Estes Park, 2146 m, 10-VII-1997, A, CSUC; *N Frk Big Thompson R*, CR 43 4.5 km upstrm from Drake, 1975 m, 25-VI-2003, A, CSUC; *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 31-V-1986, A, CSUC; *Cache la Poudre R*, Fort Collins, 1507 m, 30-VII-1937, A, INHS; Martinez Park Fort Collins, 1513 m, 16-VI-1999, A, CSUC; *Glacier Crk*, YMCA of the Rockies at Estes Park, 2435 m, 1-VII-2004, A, CSUC; *Icy Brk*, Loch Vale blw Timberline Falls RMNP, 3208 m, 5-VII-1988, A, CSUC; *Sheep Crk*, Cherokee Park, 2223 m, 24-VI-1991, A, CSUC; **Park Co**, *Buckskin Crk*, FR 416 W of Alma, 3207 m,

9-VIII-2003, A, CSUC; *Lost Crk*, Lost Crk Wilderness Area Pike NF close to trailhead, 2977 m, 13-VI-2004, A, RWHD.

Remarks: *Sweltsa coloradensis* one of the most common stoneflies in small and large streams from headwaters to the lower foothills in Colorado (DeWalt et al. 1994) and the SPRB. Adults were present between May and August. Specimens were collected between 1507 m and 3208 m in elevation.

**Sweltsa fidelis* (Banks) 1920

Appendix B, page B12

Records: COLORADO, **Boulder Co**, *Red Rock Lake*, 3097 m, 7-VII-1984, A, CSUC.

Remarks: Only one record of this widespread western North American species was available from the SPRB. Additional populations likely occur in small subalpine and montane streams elsewhere in the basin. The single adult record was collected during July at 3097 m in elevation.

Sweltsa lamba (Needham and Claassen) 1925

Appendix B, page B13

Records: COLORADO, **Boulder Co**, *Coon Track Crk*, just upstream from Caribou Mine, 2982 m, 10-VII-1994, A, CSUC; *Hutcheson Lake*, RMNP, 3308 m, 12-VIII-2006, A, RWHD; *Long Lake*, outlet of Long Lake, 3229 m, 8-VIII-2003, A, CSUC; *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; *Camp Dick* abv Peaceful Valley, 2608 m, 4-VII-1997, A,

CSUC; *Mitchell Crk*, at trailhead just W of Brainard lake, 3199 m, 10-VII-1994, A, CSUC; 22-VIII-1996, A, CSUC; *N Frk Mid Boulder Crk*, Arapaho Pass Trail, 3087 m, 28-VII-1995, A, CSUC; *S Frk Mid Boulder Crk*, at Hessie, 3190 m, 12-IX-1998, A, CSUC; *pond*, W of Long Lake trailhead W of Brainard Lake, 3200 m, 31-VII-1998, A, CSUC; *CU Science Lodge*, 2899 m, 7-VII-1974, A, INHS; *spring*, at Mitchell Crk Picnic Area W of Brainard Lake, 3259 m, 31-VII-1998, A, CSUC; *S Saint Vrain Crk*, N of Ward, 2652 m, 7-VII-1944, A, INHS; **Clear Creek Co**, *Bear Crk*, at Camp Rock Cmpgrd W of Evergreen, 2682 m, 10-VII-2005, A, RWHD; *unnamed trib of Bear Crk*, at Table Rock W of Evergreen, 2761 m, 10-VII-2005, A, RWHD; *Chicago Crk*, at Chicago Frks Cmpgrd, 2816 m, 30-VII-1998, A, CSUC; 9 km from Idaho Springs Hwy 103, 2610 m, 24-VI-2006, A, RWHD; *W Chicago Crk*, cmpgrd at end of FR 189, 3012 m, 28-VI-2007, A, CSUC; *Duck Crk*, blw Duck Lake nr Guanella Pass, 3395 m, 24-VI-2006, A, RWHD; *S Frk Clear Crk*, 1.6 km blw Guanella Pass, 3350 m, 15-VIII-2004, A, RWHD; at Guanella Pass Cmpgrd nr Guanella Pass, 3294 m, 4-IX-2006, A, RWHD; *W Frk Clear Crk*, Hwy 40 W of Empire upstrm from Blue Crk, 2901 m, 9-VII-2003, A, CSUC; *unnamed trib S Frk Clear Crk*, at Guanella Pass Cmpgrd nr Guanella Pass, 3294 m, 9-VII-2005, A, RWHD; 4-IX-2006, A, RWHD; *seep blw Naylor Lake*, nr Guanella Pass, 3158 m, 14-VI-2002, A, RWHD; 7-VII-2007, A, RWHD; **Douglas Co**, *Jarre Crk*, 8 km south of Sedalia Hwy 67, 2070 m, 27-VI-2007, A, CSUC; *spring seep into Cherry Crk*, Castlewood Canyon State Park, 1911 m, 7-VII-1988, A, CSUC; **Gilpin Co**, *Notts Crk*, at Golden Gate Canyon State Park, 2725 m, 4-VII-2004, A, CSUC;

Jefferson Co, *Kennedy Gulch*, at Reynolds Park 8 km from Conifer, 2229 m, 8-VI-2004, A, RWHD; *Maxwell Crk*, at Maxwell Falls Trailhead Arapaho NF, 2535 m, 10-VII-2005, A, RWHD; *unnamed trib of N Turkey Crk*, Flying J Ranch Open Space nr Conifer, 2486 m, 6-VI-2005, A, RWHD; **Larimer Co**, at Estes Park, 2314 m, 3-VIII-1921, INHS; 27-VIII-1924, INHS; *Elkhorn Crk*, Cache la Poudre Canyon 35.4 km W of Fort Collins, 2748 m, 1-VIII-1986, A, CSUC; Ben Delatour Scout Ranch, 2289 m, 21-VI-1990, A, CSUC; *Fall R*, 1.6 km east of Hidden Valley Rd RMNP, 2620 m, 16-VI-2007, A, CSUC; *Fish Crk*, 1.6 km south of Estes Park CR 63, 2316 m, 16-VI-2007, A, CSUC; *Glacier Crk*, RMNP, 2631 m, 17-VIII-1940, A, INHS; *Hidden Valley Crk*, RMNP, 2690 m, 25-VII-1938, A, INHS; *The Loch*, RMNP, 3103 m, 2-VIII-1988, A, CSUC; *Little Beaver Crk*, nr 63 E Rd, 2411 m, 6-VIII-1995, A, CSUC; *Milner Pass*, RMNP, 3270 m, 20-VIII-1941, A, INHS; *Mitchell Crk*, at Brainard Lake Rd, 3170 m, 8-VIII-2003, A, CSUC; *Pennock Crk*, CR 63 and 44 H Rd, 2551 m, 11-VI-2007, A, CSUC; at Pingree Park, 2743 m, 20-25-VIII-1923, A, INHS; *Sand Crk*, Red Mountain Ranch Open Space in Haygood Canyon, 1868 m, 21-IX-2007, A, CSUC; *Sheep Crk*, nr confl Buckhorn Crk, 2046 m, 12-VI-1997, A, CSUC; *Skin Gulch*, at Stove Prairie Rd, 1893 m, 8-V-1993, A, CSUC; *S Frk Cache la Poudre R*, Mummy Pass, 3415 m, 21-IX-2003, A, CSUC; 2743 m, 22-VI-1996, A, CSUC; *tributary to Box Prairie Crk*, CR 44H 0.8 km E of Box Prairie, 2555 m, 10-VI-2007, A, CSUC; *tributary to Pennock Crk*, 2 miles w of Pennock Pass, 2595 m, 19-VI-2007, A, CSUC; **Park Co**, *Deer Crk*, abv Highland Park, 2783 m, 23-VII-2006, A, RWHD; *Duck Crk*, blw Duck Lake nr Guanella Pass, 3395 m, 9-VII-

2005, A, RWHD; *Mosquito Crk*, FR 438/CR12 W of Park City, 3274 m, 9-VIII-2003, A, CSUC; *Lost Crk*, Lost Crk Wilderness Area Pike NF 4.8 km dwnstrm of trailhead, 2952 m, 13-VI-2004, A, RWHD; Lost Crk Wilderness Area nr trailhead, 2977 m, 13-VI-2004, A, RWHD; *Scott Gomer Crk*, nr Grant, 2616 m, 9-VII-2005, A, RWHD.

Remarks: *Sweltsa lambda* is one of the most common chloroperlid stoneflies in the SPRB. The type locality is Fern Lake in RMNP near Estes Park, Colorado. This species is usually associated with small, high elevation streams (Baumann et al. 1977) but can also be collected from less impacted streams along the transition zone between mountains and plains (Kondratieff and Baumann 2002). Adults were present between May and September. Specimens were collected between 1868 m and 3395 m.

Triznaka pintada (Ricker) 1952

Appendix B, page B13

Records: COLORADO, **Douglas Co**, *Jarre Crk*, 8 km SW of Sedalia Hwy 67, 2070 m, 27-VI-2007, A, CSUC; **Elbert Co**, *Kiowa Crk*, at Elbert, 2047 m, 31-V-1986, A, CSUC; at Kiowa, 1932 m, 26-IV-1986, A, CSUC; **Jefferson Co**, *Coal Crk*, Hwy 72 in Coal Crk Canyon, 2012 m, 2-VI-2004, A, CSUC; *Kennedy Gulch*, at Reynolds Park 8 km from Conifer, 2229 m, 8-VI-2004, A, RWHD; **Larimer Co**, *Aspen Brk*, YMCA of the Rockies at Estes Park, 2441 m, 1-VII-2004, A, CSUC; *Cache la Poudre R*, Fort Collins at Lions Park on Overland Trail Rd, 1561 m, 14-V-2007, A, CSUC; *Elkhorn Crk*, Ben Delatour Scout

Ranch, 2289 m, 21-VI-1990, A, CSUC; *Fish Crk*, 1.6 km S of Estes Park on CR 63, 2316 m, 16-VI-2007, A, CSUC; *inlet to Horsetooth Res*, SW edge of Inlet Bay, 1707 m, 13-VII-2007, A, CSUC; *Lone Pine Crk*, W of Livermore, 1819 m, 22-VI-1986, A, CSUC; *N Frk Poudre River*, at Poudre River Diversion, 1633 m, 14-VI-2005, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 17-VII-1995, A, CSUC; *Mid Frk S Platte R*, nr Garo, 2807 m, 22-VI-2002, A, RWHD; *S Frk S Platte R*, Knight-Imbler SWA, 2802 m, 13-VIII-1996, A, CSUC; *Tarryall Crk*, Hwy 285, 2943 m, 3-VIII-1986, A, CSUC; **Teller Co**, *Rule Crk*, N of Woodland Park, 2436 m, 4-VIII-1987, A, CSUC.

Remarks: This common western North American species displays a more southern distribution than other *Triznaka* species (Baumann and Kondratieff 2008b). Adults were present between May and August. Specimens were collected between 1561 m and 2943 m in elevation.

Triznaka signata (Banks) 1895

Appendix B, page B14

Records: COLORADO, **Boulder Co**, *Saint Vrain Crk*, Lyons Hwy 66, 1691 m, 7-VI-2005, A, CSUC; *S Saint Vrain Crk*, Hwy 7 W of Lyons, 1652 m, 28-VII-1998, A, CSUC; 7.2 km upstrm from Hwy 7/36 intersection in Lyons, 1753 m, 25-VI-2003, A, CSUC; Bohn Park in Lyons at confl with N Saint Vrain Crk, 1633 m, 26-VI-2003, A, CSUC; **Douglas Co**, *Cherry Crk*, 11 km S of Parker at Castle Oak Dr off Hwy 83, 1852 m, 3-VII-2007, A, CSUC; *Horse Crk*, at confl with Trout Crk, 2024 m, 1-VI-1985, A, CSUC; *West Crk*, 2277 m, 5-VII-1941, A,

INHS; **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W of Loveland, 1853 m, 9-VI-2005, A, CSUC; Hwy 34 at Drake, 1875 m, 8-VII-1998, A, CSUC; 27-VII-1938, INHS; 2.2 km upstrm of Drake, 1991 m, 25-VI-2003, A, CSUC; Hwy 34 and CR 34H, 1550 m, 9-VI-2003, A, CSUC; *N Frk Big Thompson R*, 4.5 km upstrm of Drake CR 43, 1975 m, 25-VI-2003, A, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 22-V-1987, A, CSUC; 22-VI-1988, A, CSUC; Fort Collins at Martinez Park, 1513 m, 16-VI-1999, A, CSUC; 18-VI-1990, A, CSUC; 5.6 km W of Hwy 287, 1602 m, 1-VII-2003, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 27-VI-1990, A, CSUC; *Little Thompson R*, County Line Rd nr Berthoud, 1509 m, 14-V-2001, L; *Lone Pine Crk*, W of Livermore, 1819 m, 22-VI-1986, A, CSUC; **Park Co**, *S Frk S Platte R*, nr confl of Tarryall Crk, 2502 m, 2-VII-1986, A, CSUC; Knight-Imler SWA, 2802 m, 13-VIII-1996, A, CSUC; *Mid Frk S Platte R*, nr Garo, 2807 m, 22-VI-2002, A, RWHD; *Tarryall Crk*, at Tarryall, 2639 m, 15-VII-1956, A, INHS; 17-VI-1954, A, INHS.

Remarks: This species typically inhabits larger streams than *T. pintada* but in Colorado they occasionally occur in the same habitat (Baumann and Kondratieff 2008b). During high water years, larvae and adults can be collected near Interstate 25 on the Cache la Poudre River, nearly 30 km east of the plains mountain interface. Adults were present May to August. Specimens were collected from 1509 m to 2807 m in elevation.

Leuctridae (Rolled-wing Stoneflies)

**Paraleuctra occidentalis* (Banks) 1907

Appendix B, page B14

Records: COLORADO, **Larimer Co**, *Wind R*, Estes Park, 2524 m, 12-VI-1937, A, INHS; *S Frk Cache la Poudre R*, Mummy Pass, 3415 m, 19-VII-2003, A, CSUC.

Remarks: This widespread North American species (Stark and Kyzar 2001) is known from few records in the SPRB at high elevations. Adults were present in June and July. Specimens were collected between 2524 m and 3415 m in elevation.

Paraleuctra projecta (Frison) 1942

Appendix B, page B15

Records: COLORADO, **Boulder Co**, *Wild Basin*, RMNP, 2553 m, 13-VI-1937, A, INHS; **Clear Creek Co**, *seep blw Naylor Lake*, nr Guanella Pass, 3158 m, 14-VI-2002, A, RWHD; 14-VI-2005, A, CSUC.

Remarks: These specimens were described from Wild Basin in RMNP as *Paraleuctra rickeri* Nebeker which recently became a junior synonym of *P. projecta* (Stark and Kyzar 2001). This species is rarely collected in Colorado known only from Boulder, Clear Creek, and Garfield Counties where larvae typically occur in high elevation spring seeps (Kondratieff and Baumann 2002). Adults were present in June. Specimens were collected between 2553 m and 3158 m in elevation.

Paraleuctra vershina Gaufin and Ricker 1974

Appendix B, page B15

Records: COLORADO, **Boulder Co**, *James Crk*, 94 Rd at Jamestown, 1951 m, 1-VI-2005, A, CSUC; *Rock Crk*, Hwy 7, 2487 m, 19-VI-1986, A, CSUC; *Saint Vrain Crk*, Hwy 7, 1652 m, 19-VI-1986, A, CSUC; *Mid Saint Vrain Crk*, Camp Dick access rd just off Hwy 72, 2634 m, 25-VI-2003, A, CSUC; 4-VII-1999, A, CSUC; *S Saint Vrain Crk*, Hwy 7 7.2 km upstrm from Hwy 36 in Lyons, 1753 m, 25-VI-2003, A, CSUC; **Clear Creek Co**, *Bear Crk*, at Camp Rock Cmpgrd W of Evergreen, 2682 m, 10-VII-2005, A, RWHD; *Clear Crk*, abv Lower Cabin Crk Res, 3058 m, 14-VI-2002, A, RWHD; *Cascade Crk*, 0.8 km upstream from Hwy 103 just SW of Idaho Springs, 2674 m, 27-VI-2007, A, CSUC; *Chicago Crk*, 9 km from Idaho Springs Hwy 103, 2610 m, 24-VI-2006, A, Exuviae, RWHD; *W Chicago Crk*, cmpgrd at end of FR 188 about 13 km SW of Idaho Springs, 3012 m, 27-VI-2007, A, CSUC; *Duck Crk*, blw Duck Lake nr Guanella Pass, 3394 m, 29-VI-2003, A, RWHD; 24-VI-2006, A, RWHD; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, A, CSUC; at Rollinsville Hwy 119, 2562 m, 2-VII-1995, A, CSUC; 19-VI-1986, A, CSUC; **Jefferson Co**, *Kennedy Gulch*, at Reynolds Park 8 km from Conifer, 2229 m, 8-VI-2004, A, RWHD; **Larimer Co**, *Big Thompson R*, YMCA of the Rockies in Estes Park, 2437 m, 7-VI-2005, A, CSUC; *Box Prairie Crk*, nr Box Prairie at 44H Rd, 1850 m, 10-VI-2007, A, CSUC; *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 31-V-1986, A, CSUC; *trib to Buckhorn Crk*, 4.1 km W of Sheep Crk, 2115 m, 22-VI-1997, A, CSUC; *Fish Crk*, 1.5 km S of Estes Park on CR 63, 2316 m, 16-VI-2007, A, CSUC;

Miller Frk, 2 km E of Glen Haven on CR 926, 2134 m, 8-VI-2007, A, CSUC; *N Frk Big Thompson R*, 1 km W of Drake at CR 43, 1906 m, 8-VI-2007, A, CSUC; 4.5 km upstrm of Drake on CR 43, 1975 m, 25-VI-2003, A, CSUC; *Pennock Crk*, CR 63 and 44H Rd, 2551 m, 11-VI-2007, A, CSUC; *S Frk Cache la Poudre R*, B. Simpson house, 1993 m, 14-VI-1986, A, CSUC; **Park Co**, *Duck Crk*, blw Guanella Lake nr Guanella Pass, 3395 m, 9-VII-2005, A, RWHD; *Jefferson Crk*, blw Jefferson Lake nr Jefferson, 3018 m, 25-V-2006, A, RWHD; *Lost Crk*, Lost Crk Wilderness Area 4.8 km dwnstrm of trailhead, 2952 m, 13-VI-2004, A, RWHD; nr trailhead, 2978 m, 13-VI-2004, A, RWHD; *S Frk S Platte R*, just blw Weston Pass Cmpgrd Pike NF, 3051 m, 12-VI-2004, A, RWHD; *Scott Gomer Crk*, trib of Geneva Crk nr Grant, 2616 m, 9-VII-2005, A, RWHD.

Remarks: A western North American stonefly that is common in the montane portion of the SPRB and Colorado (Baumann et al. 1977, Kondratieff and Baumann 2002). Adults were present from May through July. Specimens were collected between 1652 m and 3395 m in elevation.

**Perlomyia utahensis* Needham and Claassen 1925

Appendix B, page B16

Records: COLORADO, **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, A, CSUC; **Park Co**, *4 Mile Crk*, FR 421/CR 18 S of Fairplay, 3304 m, 10-VII-2003, A, CSUC.

Remarks: A western North American species that is uncommonly reported (Call and Baumann 2002, Kondratieff and Lechleitner 2002, Kondratieff and

Baumann 2002). Baumann et al. (1977) reported this species from springs, streams, and small rivers in the Rocky Mountains. Adults were present in July. Specimens were collected between 2779 m and 3304 m in elevation.

Nemouridae (Nemourid Stoneflies)

Amphinemura banksi Baumann and Gaufin 1972

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Records: COLORADO, **Boulder Co**, *Cony Crk*, blw Hutcheson Lake RMNP, 3308 m, 12-VII-2006, A, RWHD; *Red Rock Lake*, 3096 m, 9-VIII-1984, A, CSUC; *bog*, W of Red Rock Lake, 3102 m, 22-VIII-1996, A, CSUC; 31-VII-1998, A, CSUC; **Clear Creek Co**, *Clear Crk*, CR 306 I-70 exit 232, 2535 m, 23-IX-2003, A, CSUC; **Larimer Co**, *Beaver Crk*, Pingree Rd, 2743 m, 26-IX-1987, A, CSUC; *Bennett Crk*, Bennett Crk Picnic area 63 E Rd, 2299 m, 4-IX-1993, A, CSUC; *Big Thompson R*, Moraine Park in RMNP, 2456 m, 10-IX-1993, A, CSUC; *Fall Crk*, 1.6 km W of Pingree Park, 2871 m, 11-IX-2007, A, CSUC; at Cirque Meadow, 2988 m, 11-IX-2007, A, CSUC; *Fall R*, Estes Park, 2304 m, 15-VIII-1940, A, INHS; *malaise trap*, 22 km W of Livermore, 1775 m, VIII-1987, A, CSUC; *Glacier Crk*, RMNP, 2631 m, 17-VIII-1940, A, INHS; *Lawn Lake*, RMNP, 3349 m, 15-VII-2001, A, CSUC; *Little Brainard Lake*, Red Feather Rd, 3150 m, 13-IX-1986, A, CSUC; *The Loch*, RMNP, 3103 m, 24-VIII-1988, A, CSUC; *Pingree Park*, 2743 m, 17-VIII-1924, A, INHS; Estes Park, 2311 m, 27-VIII-1924, A, INHS; *small stream*, Glacier View H.E. Evans home nr Fort Collins, 2670 m, 2-VIII-1986, A, CSUC; *S Frk Cache la Poudre R*, 5 km WNW

of Box Prairie, 2520 m, 11-IX-2007, A, CSUC; *outlet of Twin Lakes Res*, on CR 63, 2735 m, 11-IX-2007, A, CSUC; **Park Co**, *4 Mile Crk*, FR421 / CR18 S of Fairplay, 3304 m, 29-VIII-2003, A, CSUC; *Buckskin Crk*, FR 416 W of Alma, 3207 m, 9-VIII-2003, A, CSUC; 28-VIII-2003, A, CSUC; *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 17-IX-1995, A, CSUC; *Mosquito Crk*, FR 438/CR12 W of Park City, 3274 m, 29-VIII-2003, A, CSUC; 9-VIII-2003, A, CSUC; *Tarryall Crk*, Hwy 285, 2943 m, 3-VIII-1986, A, CSUC; *S Frk S Platte R*, Knight-Imler SWA, 2802 m, 13-VIII-1996, A, CSUC; **Teller Co**, *Rule Crk*, off Hwy 67 N of Woodland Park, 2436 m, 4-VIII-1987, A, CSUC.

Remarks: *Amphinemura banksi* was originally described from Hidden Valley in RMNP (Baumann and Gaufin 1972). This species commonly occurs in mountain streams and rivers in the SPRB and Colorado (Baumann et al. 1977). Adults were present between July and September. Specimens were collected from 1775 m to 3349 m in elevation.

Malenka californica (Claassen) 1923

Appendix B, page B17

Records: COLORADO, **Boulder Co**, *irrigation ditch*, along S Boulder Crk Lafayette, 1624 m, 3-X-1995, A, CSUC; *James Crk*, at Jamestown, 1951 m, 2-IX-2005, A, CSUC; *Mid Saint Vrain Crk*, Camp Dick abv Peaceful Valley, 2608 m, 4-VII-1999, A, CSUC; *N Saint Vrain Crk*, blw Longmont Res, 1854 m, 18-XI-1998, A, CSUC; 11.2 km W of Lyons, 1823 m, 28-IX-1986, A, CSUC; *S Saint Vrain Crk*, Lefthand Canyon, 2652 m, 1-X-1994, A, CSUC; *S Boulder Crk*,

Mesa Trailhead, 1759 m, 3-X-1995, A, CSUC; Lafayette, 1614 m, 13-X-1995, A, CSUC; **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W of Loveland, 1853 m, 8-VI-1999, A, CSUC; YMCA of the Rockies at Estes park, 2437 m, 29-IX-2005, A, CSUC; *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 2-X-1986, A, CSUC; 16 km N of Masonville, 1920 m, 7-X-1987, A, CSUC; 24 km NW of Masonville, 2067 m, 18-IX-1991, A, CSUC; 18-IX-1991, A, CSUC; 12.8 km n of Masonville, 1856 m, 27-IX-1989, A, CSUC; *Glacier Crk*, Moraine Park RMNP, 2474 m, 18-X-1998, A, CSUC; *Mill Crk*, RMNP, 2544 m, 13-IX-1954, A, INHS; *outlet of Twin Lakes Res*, at CR 63, 2735 m, 11-IX-2007, A, CSUC; *Skin Gulch*, at Stove Prairie Rd, 1892 m, 8-V-1993, A, CSUC; *Sheep Crk*, nr jct Buckhorn Crk, 2046 m, 15-X-1995, A, CSUC; *7 Mile Crk*, FR 225 and CR 69, 2261 m, 25-VIII-2006, L, CSUC; *RMNP*, Headquarters Area, 2343 m, 13-VII-1999, A, CSUC; *Roaring Crk*, 0.8 km from trailhead, 2385 m, 20-X-2004, A, CSUC; *S Frk Cache la Poudre R*, 6 km WNW of Box Prairie, 2520 m, 11-IX-2007, A, CSUC; *Young Gulch*, 1.6 km abv Hwy 14, 1840 m, 4-X-1987, A, CSUC; 14-VI-1994, A, CSUC.

Remarks: This is a common late season emerging species, although some populations begin emergence in spring and continue until December (Baumann et al. 1977). *Malenka californica* can be collected from small to mid-sized streams in the transition zone along the Front Range portion of the SPRB. Adults were present between May and November. Specimens were collected from streams between 1614 m and 2735 m.

Malenka coloradensis (Banks) 1897

Appendix B, page B17

Records: COLORADO, **Boulder Co**, *Little James Crk*, nr confl of Gillman Gulch, 2423 m, 1-VI-2005, A, CSUC; *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; *S Saint Vrain Crk*, N of Ward, 2652 m, 7-VII-1944, A, INHS; **Clear Creek Co**, *unnamed trib of Bear Crk*, at Table Rock Cmpgrd W of Evergreen, 2761 m, 10-VII-2005, A, RWHD; **Douglas Co**, *Cherry Crk*, Castlewood Canyon State Park CR 51, 1911 m, 7-VII-1988, A, CSUC; **Jefferson Co**, *Coal Crk*, Hwy 72 at Coal Crk Canyon, 2012 m, 25-VI-2004, A, CSUC; *Maxwell Crk*, at Maxwell Falls Trailhead Arapaho NF, 2535 m, 10-VII-2005, A, RWHD; **Larimer Co**, *Aspen Brk*, YMCA of the Rockies at Estes Park, 2441 m, 1-VII-2004, A, CSUC; *spring*, by ranch house at Soapstone Prairie Natural Area, 1918 m, 8-V-2009, A, CSUC; *trib to Box Prairie Crk*, 0.8 km E of Box Prairie CR 44H, 2555 m, 10-VI-2007, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 21-V-1995, L, CSUC; 13-VIII-1995, A, CSUC.

Remarks: This species was originally described from Fort Collins, Colorado where it may be locally extirpated. It occurs in a variety of habitat types (e.g., large streams to small seeps) (Kondratieff and Baumann 2002) in the SPRB and a population was recently discovered in Soapstone Prairie Natural Area north of Fort Collins. Adults were present June through August. Specimens were collected at elevations between 1911 m and 2840 m.

Malenka flexura (Claassen) 1923

Appendix B, page B18

Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; CU Science Lodge, 2899 m, 19-VI-1939, A INHS; Camp Dick Access Rd abv Peaceful Valley, 2608 m, 4-VII-1999, A, CSUC; 4-VII-1999, A, CSUC; **Clear Creek Co**, *seep blw Naylor Lake*, nr Guanella Pass, 3158 m, 14-VI-2002, A, RWHD; 15-VIII-2004, A, RWHD; *Hoop Crk*, Hwy 40 turnout 1st switchback abv Henderson Mine Rd, 3230 m, 29-VI-2005, A, CSUC; *unnamed tributary to Hoop Crk*, abv Weir Hwy 40 nr Berthoud Pass, 3412 m, 20-VI-2004, A, RWHD; **Gilpin Co**, *spring*, along Rollins Pass Rd 3.2 km E of E Portal, 2722 m, VII-1994, A, CSUC; **Larimer Co**, *Inn Brk*, 1.6 km NE of Chasm Lake RMNP, 3391 m, 19-VII-2008, A, CSUC.

Remarks: *Malenka flexura* was originally described from Boulder, Colorado (Claassen 1923). This species is not commonly reported from the SPRB. It occurs in seeps, streams, and small rivers (Baumann et al. 1977). Adults were present between June and August. Specimens were collected from 2608 m to 3412 m in elevation.

Podmosta decepta (Frison) 1942

Appendix B, page B18

Records: COLORADO, **Boulder Co**, *bog*, W of Red Rock Lake, 3102 m, 10-VII-1994, A, CSUC; *N Frk Mid Boulder Crk*, Arapaho Pass Trail, 3087 m, 28-VII-1995, A, CSUC; *Saint Vrain Crk*, at Camp Dick, 2609 m, 4-VII-1999, A,

CSUC; **Larimer Co**, *Mill Crk*, nr Estes Park RMNP, 2544 m, 11-VI-1937, A, INHS; *S Frk Cache la Poudre R*, Mummy Pass, 3415 m, 19-VII-2003, A, CSUC; **Park Co**, *Mosquito Crk*, CR12 W of Park City, 3275 m, 10-VII-2003, A, CSUC.

Remarks: This widely distributed Western North American species was described from Estes Park, Colorado (Frison 1942) but was reported by few records in the SPRB. This species is usually found in small streams and sometimes in cold mountain lakes (Baumann et al. 1977). Adults were present between June and July. Specimens were collected between 2544 m and 3102 m in elevation.

Podmosta delicatula (Claassen) 1923

Appendix B, page B19

Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, Camp Dick, 2608 m, 4-VII-1999, A, CSUC; *bog*, W of Red Rock Lake, 3102 m, 7-VII-1984, A, CSUC; *S Saint Vrain Crk*, N of Ward, 2652 m, 7-VII-1944, A, INHS; *Mitchell Crk*, at Brainard Lake Rd, 3170 m, 8-VIII-2003, A, CSUC; **Clear Creek Co**, *Bear Crk*, at Camp Rock Cmpgrd W of Evergreen, 2682 m, 10-VII-2005, A, RWHD; *Duck Crk*, blw Duck Lake near Guanella Pass, 3395 m, 24-VI-2006, A, RWHD; *S Frk Clear Crk*, 1.6 km blw Guanella Pass, 3350 m, 15-VIII-2004, A, RWHD; *W Chicago Crk*, cmpgrd at end of FR 188 13 km SW of Idaho Springs, 3012 m, 27-VI-2007, A, CSUC; **Gilpin Co**, *S Boulder Crk*, Rollinsville Hwy 119, 2562 m, 2-VII-1995, A, CSUC; 3.2 km W of Tolland, 2779 m, 7-VII-1991, A,

CSUC; **Larimer Co**, *Brainard Lake*, Red Feather Lakes Rd, 3150 m, 13-IX-1986, A, CSUC; *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 31-V-1986, A, CSUC; *Fall R*, 0.8 km dwnstrm Endo Valley Picnic area RMNP, 2637 m, 22-VII-1987, A, CSUC; *Glacier Crk*, YMCA of the Rockies at Estes Park, 2435 m, 1-VII-2004, A, CSUC; *Hidden Valley Crk*, RMNP, 2690 m, 25-VII-1938, A, INHS; *Lawn Lake*, RMNP, 3349 m, 15-VII-2001, A, CSUC; *Wind R*, Estes Park, 2524 m, 12-VI-1937, A, INHS; **Park Co**, *4 Mile Crk*, FR 421/CR 18 S of Fairplay, 3304 m, 10-VII-2003, A, CSUC; 29-VIII-2003, A, CSUC; *Buckskin Crk*, FR 416 W of Alma, 3207 m, 10-VII-2003, A, CSUC; *Mosquito Crk*, FR 438/CR12 W of Park City, 3274 m, 10-VII-2003, A, CSUC; 9-VIII-2003, A, CSUC; *Lost Crk*, Lost Crk Wilderness Area Pike NF 4.8 km dwnstrm of trailhead, 2952 m, 13-VI-2004, A, RWHD; Lost Crk Wilderness Area Pike NF nr trailhead, 2977 m, 13-VI-2004, A, RWHD.

Remarks: Claassen originally described this species from Boulder, Colorado (Claassen 1923). *Podmosta delicatula* is a more common species than *P. decepta* and found in similar habitats (Kondratieff and Baumann 2002). Adults were present between May and September. Specimens were collected between 2033 m and 3395 m in elevation.

Prostoia besametsa (Ricker) 1952

Appendix B, page B19

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Canyon mouth in Boulder, 1656 m, 13-IV-1995, L; 14-IV-1998, L; at 28th St in Boulder, 1613 m, 14-IV-

1998, L; at Broadway Ave in Boulder, 1630 m, 15-IV-1997, L; 14-IV-1998, L; *Mid Boulder Crk*, nr Castle Rock, 2317 m, 14- III-2006, L, CSUC; *S Boulder Crk*, Mesa Trailhead 2.7 km W of Hwy 93, 1759 m, 12-IV-1995, A, CSUC; *James Crk*, 94 Rd at Jamestown, 1951 m, 1-VI-2005, A, CSUC; Ward Rd at Jamestown, 1951 m, 1-VI-2005, A, CSUC; *St. Vrain Crk*, Lyons at Hwy 66, 1646 m, 23-IV-2005, A, CSUC; Longmont nr 85th and 9th Streets, 1530 m, 29-III-2006, L, DRees; *Mid Saint Vrain Crk*, Camp Dick Access Rd just off Hwy 72, 2634 m, 25-VI-2003, A, CSUC; **Clear Creek Co**, *Bear Crk*, at Camp Rock Cmpgrd W of Evergreen, 2682 m, 10-VII-2005, A, RWHD; *Clear Crk*, abv Idaho Springs, 2291 m, 9-IV-1996, N, CSUC; abv Lower Cabin Creek Res, 3059 m, 14-VI-2002, A, RWHD; *W Chicago Crk*, cmpgrd at end of FR 188 13 km SW of Idaho Springs, 3012 m, 27-VI-2007, A, CSUC; **Douglas Co**, *S Platte R*, N of Nighthawk, 1892 m, 18-III-2006, A, RWHD; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, A, CSUC; **Jefferson Co**, *S Platte R*, at Deckers, 1950 m, 16-III-1986, A, CSUC; *N Frk S Platte R*, at Buffalo, 2022 m, 13-IV-1988, A, CSUC; *Goose Crk*, nr Goose Crk trailhead Pike NF, 2279 m, 2-VI-2002, A, RWHD; *Kennedy Gulch*, at Reynolds Park 8 km from Conifer, 2229 m, 28-IV-2002, L, RWHD; **Larimer Co**, *Big Thompson R*, YMCA of the Rockies at Estes Park, 2437 m, 7-VI-2005, A, CSUC; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 28-IV-1990, A, CSUC; 17-IV-2005, A, CSUC; RMNP 180 m SE Bear Lake Rd, 2440 m, 6-VI-1985, L, CSUC; *N Frk Big Thompson R*, 4.8 km upstream of Drake, 1983 m, 6-V-2006, A, RWHD; *Buckhorn Crk*, nr confl N Frk Fish Crk, 1832 m, 21-III-1986, A, CSUC; confl with Sheep Crk, 2046 m, 3-

V-1997, A, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 5-IX-1977, A, CSUC; 3-IV-1987, A, CSUC; *S Frk Cache la Poudre R*, B. Simpson house, 1993 m, 14-VI-1986, A, CSUC; *Dale Crk*, Hwy 287, 2059 m, 26-IV-1992, A, CSUC; *Fall R*, Endo Valley Picnic area RMNP, 2637 m, 22-VII-1987, A, CSUC; *Glacier Basin*, Estes Park, 2614 m, 10-VI-1937, A, INHS; *Glacier Crk*, YMCA of the Rockies at Estes Park, 2477 m, 19-V-2005, A, CSUC; 24-IV-2005, A, CSUC; *7 Mile Crk*, 69 Rd and FR225, 2261 m, 28-IV-2007, L, CSUC; *Sand Crk*, Red Mountain Ranch Open Space in Haygood Canyon, 1868 m, 13-IV-2007, A, CSUC; *Young Gulch*, abv Ansel Watrous Cmpgrd Hwy 14 in Cache la Poudre Canyon, 1769 m, 22-III-1986, L, CSUC; **Park Co**, *Buckskin Crk*, FR 416 W of Alma, 3207 m, 10-VII-2003, A, CSUC; *Lost Crk*, Lost Crk Wilderness Area Pike NF nr trailhead, 2977 m, 13-VI-2004, A, RWHD; *Mosquito Crk*, FR 438/CR12 W of Park City, 3274 m, 10-VII-2003, A, CSUC; 9-VIII-2003, A, CSUC; *Scott Gomer Crk*, nr Grant, 2616 m, 9-VII-2005, A, RWHD.

Remarks: *Prostoia besametsa* is one of the more common western North American stonefly species found in medium to large mountain streams (Baumann et al. 1977). This species was probably once more common in transition zone streams of the SPRB, but may have experienced population declines by decreased water quality and low flows associated with contemporary water use. For example, it was once common in the Cache la Poudre River at Lions Park in Fort Collins but is now apparently extirpated from

the lower portions of that river. Adults were present between March and September. Specimens were collected from 1544 m to 3274 m in elevation.

Zapada cinctipes (Banks) 1897

Appendix B, page B20

Records: COLORADO, **Boulder Co**, *Gillman Gulch*, off CR 94 upstrm confl of Little James Crk, 2423 m, 1-VI-2005, A, CSUC; *Gregory Crk*, Gregory Canyon Chautauqua Park Boulder, 1771 m, 15-III-1998, A, CSUC; *S Saint Vrain Crk*, Hwy 7 at confl with Central Gulch W of Lyons, 1904 m, 4-IV-2003, A, CSUC; W of Lyons, 1970 m, 7-III-2004, A, RWHD; *N Saint Vrain Crk*, CR80 4.3 km from Hwy 36 W of Lyons, 1842 m, 4-IV-2003, A, CSUC; *Mid Saint Vrain Crk*, Camp Dick Access Rd off Hwy 72, 2634 m, 25-VI-2003, A, CSUC; *James Crk*, trib to James Crk abv Jamestown, 2287 m, 19-IV-2005, A, CSUC; *Little James Crk*, abv Jamestown, 1932 m, 19-IV-2005, A, CSUC; **Clear Creek Co**, *Blue Crk*, nr Empire Hwy 40, 2859 m, 15-V-2005, A, RWHD; *Chicago Crk*, Chicago Frks Picnic Area, 2952 m, 10-V-1997, A, CSUC; 9 km from Idaho Springs on Hwy 103, 2717 m, 18-III-2005, A, RWHD; *seep blw Naylor Lake*, nr Guanella Pass, 3158 m, 14-VI-2002, A, RWHD; 15-VIII-2004, A, RWHD; *W Clear Crk*, Big Bend Picnic area nr Hwy 40, 3059 m, 10-IV-2007, L, CSUC; *Soda Crk*, nr Idaho Springs, 2302 m, 18-III-2005, A, RWHD; *trib to Clear Crk*, at Guanella Pass Cmpgrd, 3294 m, 9-VII-2005, A, RWHD; 17-IV-2005, A, RWHD; **Douglas Co**, *Pine Crk*, 0.4 km upstrm from S Platte nr Nighthawk, 1907 m, 5-IV-2003, A, RWHD; 14-III-2004, A, RWHD; *Sugar Crk*, approx 0.8 km upstrm from S Platte R nr Oxyoke, 1950 m, 12-IV-2003, A, RWHD; **Gilpin Co**, *N Frk Clear Crk*, Hwy

119 0.8 km N of Blackhawk, 2496 m, 5-IV-2003, A, CSUC; **Jefferson Co**,
Buffalo Crk, nr city of Buffalo Crk, 2229 m, 19-III-2004, A, RWHD; *Cub Crk*,
 trailhead Arapaho NF nr Conifer, 2555 m, 9-V-2004, A, L, RWHD; *Elk Crk*, nr
 Schaffer Crossing, 2421 m, 27-III-2005, A, RWHD; *trib to Elk Crk*, 16 km W of
 Golden, 2317 m, 13-IV-2008, A, CSUC; *Goose Crk*, at Goose Crk Cmpgrd,
 2368 m, 4-IV-2004, A, RWHD; *Maxwell Crk*, at Maxwell Falls Trailhead
 Arapaho NF, 2534 m, 3-IV-2004, A, L, RWHD; *N Frk S Platte R*, at Pine Ranch
 Open Space, 2103 m, 27-III-2005, A, RWHD; *Redskin Crk*, nr town of Buffalo
 Crk, 2319 m, 19-III-2004, A, RWHD; **Larimer Co**, *Big Thompson R*, YMCA of
 the Rockies at Estes Park, 2437 m, 7-VI-2005, A, CSUC; *Buckhorn Crk*, nr
 Pennock Pass, 2526 m, 21-III-1986, A, CSUC; *Cache la Poudre R*, Hwy 14 at
 Poudre Falls, 2523 m, 23-III-1999, A, CSUC; *Dale Crk*, Hwy 287 bridge, 2059
 m, 26-IV-1992, A, CSUC; *Glacier Basin*, Estes Park, 2614 m, 10-VI-1937, A,
 INHS; *Icy Brk*, abv The Loch RMNP, 3103 m, 14-VI-1989, A, CSUC; 10-V-
 1989, A, CSUC; *Manhattan Crk*, CR 62 and CR 69, 2576 m, 28-IV-2007, A,
 CSUC; *N Frk Big Thompson R*, 4 km upstrm from Drake, 1982 m, 6-III-2004, A,
 RWHD; *Sand Crk*, Red Mountain Ranch Open Space in Haygood Canyon,
 1868 m, 13-IV-2007, A, CSUC; *7 Mile Crk*, off Hwy 14, 2183 m, 2-IV-1986, A,
 CSUC; *Sheep Crk*, nr Buckhorn Crk, 2046 m, 24-IV-1995, A, CSUC; *S Frk*
Cache la Poudre R, Rd 63E, 2534 m, 19-V-1995, A, CSUC; *trib Skin Gulch*, Rd
 27 1.6 km abv Cache la Poudre R, 1931 m, 16-III-1991, A, CSUC; *Young*
Gulch, Cache la Poudre Canyon Hwy 14, 1769 m, 13-III-2005, A, CSUC; **Park**
Co, *4 Mile Crk*, abv Horseshoe Cmpgrd Pike NF, 3196 m, 20-V-1995, A,

CSUC; *Deer Crk*, abv Highland Park, 2782 m, 23-V-2004, A, RWHD; *Lost Crk*, Lost Crk Wilderness Area 4.8 km dwnstrm of trailhead, 2952 m, 13-VI-2004, A, RWHD.

Remarks: *Zapada cinctipes* is a very common stonefly, found in all types of montane habitats, including alpine lakes (Kondratieff and Baumann 2002). Adults were present March through June. Specimens were collected between 1769 m and 3294 m in elevation.

Zapada frigida (Claassen) 1923

Appendix B, page B20

Records: COLORADO, **Clear Creek Co**, *unnamed trib to Hoop Crk*, abv Weir Hwy 40 nr Berthoud Pass, 3412 m, 20-VI-2004, A, RWHD; **Larimer Co**, *S Frk Poudre R*, Mummy Pass, 3415 m, 15-VII-2003, 30-VII-2003, A, CSUC; **Park Co**, *4 Mile Crk*, FR 421/CR 18 S of Fairplay, 3304 m, 10-VII-2003, A, CSUC.

Remarks: *Zapada frigida* is a more Pacific Northwest stonefly that is rarely collected in the SPRB (Kondratieff and Baumann 2002). It occurs in small snowmelt fed streams at elevations above 3,000 m. Adults were present in June and July. Specimens were collected from 3304 m to 3412 m in elevation.

Zapada haysi (Ricker) 1952

Appendix B, page B21

Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; *N Saint Vrain Crk*, blw

Thunder Lake, 3227 m, 6-VII-1989, A, CSUC; *S Saint Vrain Crk*, Hwy 7, 1652 m, 19-VI-1986, A, CSUC; **Clear Creek Co**, *Hoop Crk*, nr Berthoud Pass, 3170 m, 16-V-2004, A, RWHD; 29-VI-2005, A, CSUC; **Larimer Co**, *Glacier Crk*, 0.8 km SW of Sprague Lake RMNP, 2646 m, 2-VIII-1988, A, CSUC; *Icy Brk*, Loch Vale blw Timberline Falls RMNP, 3208 m, 5-VII-1988, A, CSUC; abv The Loch RMNP, 3103 m, 14-VI-1989, A, CSUC; **Park Co**, *4 Mile Crk*, FR 421/CR 18 S of Fairplay, 3304 m, 10-VII-2003, A, CSUC.

Remarks: This is a common stonefly, characteristic of small to mid-sized mountain streams of the SPRB. This species often co-occurs with *Z. cinctipes* (Kondratieff and Baumann 2002). Adults were present between May and August. Specimens were collected between 1652 m and 3304 m in elevation.

Zapada oregonensis (Claassen) 1923

Appendix B, page B21

Records: COLORADO, **Boulder Co**, *James Crk*, 94 Rd at Jamestown, 1951 m, 1-VI-2005, A, CSUC; *N Frk Mid Boulder Crk*, Arapaho Pass Trail, 3087 m, 28-VII-1995, A, CSUC; *Mid Saint Vrain Crk*, Camp Dick, 2608 m, 4-VII-1999, A, CSUC; **Clear Creek Co**, *seep*, blw Naylor Lake nr Guanella Pass, 3158 m, 14-VI-2002, A, RWHD; 29-VI-2003, A, RWHD; *S Frk Clear Crk*, 1.6 km blw Guanella Pass, 3350 m, 15-VIII-2004, A, RWHD; *unnamed trib to Hoop Crk*, abv Weir Hwy 40 nr Berthoud Pass, 3412 m, 20-VI-2004, A, RWHD; **Larimer Co**, *Alpine Brk*, Goblins Forest Campground 1.6 km W of Longs Peak Ranger Station RMNP, 3033 m, 8-VII-2008, A, CSUC; *S Frk Cache la Poudre R*, B.

Simpson home, 1993 m, 14-VI-1986, A, CSUC; *Chasm Falls*, RMNP, 2773 m, 10-IX-1954, A, INHS; *Mill Crk*, nr Estes Park RMNP, 2544 m, 11-VI-1937, A, INHS; *Pennock Crk*, CR 63 and 44H Rd, 2551 m, 11-VI-2007, A, CSUC; **Park Co**, *S Frk S Platte R*, just blw Weston Pass Cmpgrd Pike NF, 3051 m, 12-VI-2004, A, RWHD; WYOMING, **Albany Co**, *Mid Crow Crk*, Medicine Bow NF, 1593 m, 26-V-1986, A, CSUC.

Remarks: *Zapada oregonensis* is a more Northern Rocky Mountain species that is considered uncommon in Colorado (Baumann et al. 1977). Larvae occur in small to medium sized streams. Adults were present between May and September. Specimens were collected between 1593 m and 3412 m in elevation.

Perlidae (Common Stoneflies)

Claassenia sabulosa (Banks) 1900

Appendix B, page B22

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Canyon mouth in Boulder, 1656 m, 29-IX-1993, L; 1-X-1999, L; at 55th St in Boulder, 1583 m, 29-IX-1993, L; 1-X-1999, L; at 28th St in Boulder, 1613 m, 28-IX-1995, L; 1-X-1999, L; at Broadway Ave in Boulder, 1630 m, 1-X-1999, L; 30-IX-1997, L; **Douglas Co**, *S Platte R*, blw Waterton Canyon, 1829 m, 10-VIII-2005, A, RWHD; Twin Cedars at CR 67 and CR 40, 1892 m, 22-II-2009, L, CSUC; **Jefferson Co**, *S Platte R*, Audobon Center at Chatfield, 1662 m, 10-IX-2002, L, CSUC; **Larimer Co**, *Big Thompson R*, Taft Rd Loveland, 1518 m, 11-V-2001, L; Estes Park, 2313 m,

14-VIII-1940, INHS; Estes Park Crags Dr bridge, 2313 m, 29-VIII-1996, L, CSUC; Loveland Park, 1853 m, 3-VI-2004, A, CSUC; *N Frk Big Thompson R*, 4 km upstrm of Drake, 1982 m, 2-IX-2001, L, RWHD; *Box Elder Crk*, Red Mountain Open Space 0.8 km N of huge dam, 1919 m, 29-VI-2007, L, CSUC; *Buckhorn Crk*, 40 km N of Masonville, 1956 m, 4-IX-1989, INHS; *Cache la Poudre R*, Overland Trail Rd, 1544 m, 4-IX-1989, INHS; 4-IX-1996, L, CSUC; at mouth of canyon nr Fort Collins, 1594 m, 26-VIII-1993, L, USGSNWQL; 13-IX-1995, L, USGSNWQL; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; 31-III-1986, L, CSUC; Upper Picnic Rock Access, 1602 m, 1-IX-1991, 17-IX-1995, L, CSUC; 8 km W of Hwy 287 on Hwy 14, 1636 m, 7-VII-1989, L, CSUC; Fort Collins 1 km S of Lincoln Ave, 1516 m, 9-XI-2007, L, CSUC; Hwy 14 at Upper Landing Picnic Grounds, 1933 m, 25-VIII-2006, L, CSUC; at Diamond Rock Hwy 14, 1820 m, 25-VIII-2006, A, CSUC; *County Canal #2*, just N of Bingham Hill Rd Fort Collins, 1536 m, 29-VIII-2001, L, CSUC; *New Mercer Canal*, just N of Bingham Hill Rd Fort Collins, 1530 m, 14-V-2001, L, CSUC; **Park Co**, *Mid Frk S Platte R*, Tomahawk SWA near Garo, 2797 m, 14-VIII-2005, A, RWHD.

Remarks: *Claassenia sabulosa* is an abundant species of large streams and rivers of the montane and transition zone portions of the SPRB. The highly predaceous larvae are easily distinguished by their bright yellow and dark brown pattern. Often numerous larval exuviae can be seen attached to exposed areas of large rocks in streams in late summer and early fall.

Specimens were collected between 1508 m to 2797 m in elevation. Adults were present June through September.

Hesperoperla pacifica (Banks) 1900

Appendix B, page B22

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Canyon mouth in Boulder, 1656 m, 28-IX-1995, L; 3-X-1996, L; at Broadway Ave in Boulder, 1630 m, 15-IV-1997, L; *Saint Vrain Crk*, E of Lyons, 1600 m, 18-II-1943, INHS; *N Saint Vrain Crk*, nr Lyons, 1658 m, 18-II-1943, INHS; **Clear Creek Co**, *Bear Crk*, Camp Rock Cmpgrd W of Evergreen, 2683 m, 10-VII-2005, A, CSUC; *Chicago Crk*, 9 km from Idaho Springs Hwy 103, 2610 m, 24-VI-2006, Exuvium, RWHD; *Duck Crk*, blw Duck Lake nr Guanella Pass, 3395 m, 24-VI-2006, L, RWHD; *seep*, blw Naylor Lake nr Guanella Pass, 3159 m, 9-VII-2005, A, RWHD; 4-IX-2006, Exuviae, RWHD; **Douglas Co**, *S Platte R*, Trumbull, 1932 m, 23-VII-1987, A, CSUC; *S Platte R*, Cheesman Canyon nr Deckers, 1984 m, 12-X-2003, A, RWHD; 13-X-2003, A, RWHD; **Jefferson Co**, *S Platte R*, Waterton Canyon, 1682 m, 2-I-1993, L, CSUC; 24-VI-2000, A, RWHD; 4.8 km off Waterton Rd in Platte Canyon, 1709 m, 6-IV-2008, L, CSUC; *Clear Crk*, at Golden, 1736 m, 11-VIII-1994, L, USGSNWQL; *Goose Crk*, at Goose Crk Cmpgrd, 2368 m, 4-IV-2004, L, RWHD; **Larimer Co**, *Big Thompson R*, RMNP, 180 m SE Bear Lake Rd, 2440 m, 23-VII-1985, L, CSUC; Estes Park, 2313 m, 14-VIII-1940, INHS; 8 km dwnstrm of Estes Park, 2146 m, 21-VI-1998, A, CSUC; Craggs Dr Estes Park, 2313 m, 28-VIII-1996, L, CSUC; *N Frk Big Thompson R*, 4 km upstrm of Drake, 1982 m, 2-IX-2001, L, RWHD; *Box Elder*

Crk, Red Mountain Ranch Open Space 0.8 km N of huge dam, 1919 m, 29-VI-2007, L, CSUC; *Buckhorn Crk*, 0.8 km abv Stove Prairie Crk, 1978 m, 26-II-1989, INHS; 32 km N of Masonville, 2033 m, 13-V-1986, L, CSUC; *Cache la Poudre R*, Fort Collins Lions Park Overland Trail Rd, 1544 m, 22-V-1987, A, CSUC; 29-V-1987, A, CSUC; *Fall R*, Estes Park, 2304 m, 15-VIII-1940, INHS; *Glacier Crk*, RMNP, 2631 m, 17-VIII-1940, INHS; *Sheep Crk*, Cherokee Park, 2223 m, 25-VI-1991, A, CSUC; **Park Co**, *Lost Crk*, Lost Crk Wilderness Area Pike NF 4.8 km dwnstrm of trailhead, 2952 m, 13-VI-2004, A, RWHD; *Scott Gomer Crk*, nr Grant, 2616 m, 9-VII-2005, A, RWHD.

Remarks: *Hesperoperla pacifica* is a common and widespread western North American species that can be found in a variety of habitats from small streams and rheocrenes, to large montane streams in the SPRB (Kondratieff and Baumann 2002). Some populations occur in lower elevation portions of streams near the transition zone between mountains and plains. In some locations this species co-occurs with *C. sabulosa* (Thorp et al. 2008). Adults were present between May and September. Specimens were collected between 1544 m and 3395 m in elevation.

Perlesta decipiens (Walsh) 1862

Appendix B, page B23

Records: COLORADO, **Boulder Co**, Longmont, 1503 m, 27-VII-1938, A, INHS; **Jefferson Co**, *Ralston Crk*, abv Simms at Arvada, 1655 m, 25-VI-2003, L, USGSNWQL; **Larimer Co**, *Box Elder Crk*, Red Mountain Ranch Open Space,

1919 m, 29-VI-2007, A, CSUC; *BLT*, Cranshaw Home Fort Collins, 1524 m, 2-VIII-1987, A, CSUC; Shields St and Horsetooth Rd Fort Collins, 1540 m, 28-VIII-2003, A, CSUC; *irrigation canal*, Wellington Game Lands 3.2 km E of Wellington, 1586 m, 19-X-1986, L, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 26-VII-1997, L, CSUC; 22-VIII-2009, A, CSUC; CSU Agriculture Station 2.5 km N of Fort Collins, 1520 m, 7-VII-1997, A, CSUC; **Logan Co**, *S Platte R*, Tamarack Ranch SWA, 1137 m, 20-VII-2007, A, CSUC; **Morgan Co**, *S Platte R*, Cottonwood SWA N of Brush, 1263 m, 5-VII-2000, A, CSUC; 5-VII-2007, A, CSUC; Brush SWA N of Brush, 1273 m, 2-VI-2007, A, CSUC; Hwy 144 NE of Fort Morgan, 1294 m, 23-VI-2007, A, CSUC; Hwy 39 Bridge, 1340 m, 23-VI-2007, A, CSUC; Jean K. Tool SWA just E of Fort Morgan, 1266 m, 2-VI-2007, A, CSUC; **Sedgwick Co**, *S Platte R*, at Julesburg, 1064 m, 22-VI-2007, 20-VII-2007, A, CSUC; Julesburg SWA nr Ovid, 1077 m, 22-VI-2007, A, CSUC; 20-VII-2007, A, CSUC; **Washington Co**, *S Platte R*, Messex SWA, 1241 m, 20-VI-2007, A, CSUC; **Weld Co**, *S Platte R*, 0.8 km S of Masters at Cr 87, 1356 m, 23-VI-2007, A, CSUC; NEBRASKA, **Deuel Co**, *S Platte R*, at Big Springs, 1097 m, 19-VI-1994, L, CSUC; **Keith Co**, *S Platte R*, Ogallala Hwy 61, 1097 m, 12-VI-1994, A, CSUC; 26-VI-1996, A, CSUC; at Paxton, 933 m, 22-VI-2007, A, CSUC; **Lincoln Co**, *S Platte R*, at North Platte, 892 m, 27-VI-2003, A, CSUC; 20-VII-2007, A, CSUC.

Remarks: *Perlesta decipiens* is a widespread eastern North American stonefly. Herbert H. Ross and J. A. Ross collected the earliest record of this species known from Colorado in 1938 at Longmont, probably from Saint Vrain Creek

but has not been reported from there since. This species is readily collected from the South Platte River and irrigation canals in the eastern portion of the SPRB on the plains; however, specimens were not collected from the South Platte River west of Weld County, Colorado possibly due to poor water quality downstream from the Denver metropolitan area. A few populations have apparently colonized foothills transition zone streams via the South Platte River and its larger tributaries (Zuellig et al. 2006). For example, a population occurs in the North Fork Cache la Poudre River where it co-occurs with typical mountain taxa (Zuellig et al. 2002b, Kondratieff and Baumann 2002). Adults were present between June and August. Specimens were collected from sites ranging from 865 m to 1627 m in elevation.

Perlodidae (Perlodid Stoneflies)

**Arcynopteryx compacta* (McLachlan) 1872

Appendix B, page B23

Records: COLORADO, **Boulder Co**, *Chasm Lake*, outlet stream of Chasm Lake RMNP, 3536 m, 16-VII-1994, A, L, CSUC; 19-VII-2009, L, CSUC; inlet stream to Chasm Lake, RMNP, 3600 m, 8-VIII-1997, A, CSUC; *at Ward*, 2814 m, A, (Hanson 1942).

Remarks: This predatory holarctic stonefly occurs in high elevation lake inlet and outlet streams (Baumann et al. 1977). In the SPRB it is known only from two locations in Colorado, inlets and outlets of Chasm Lake in RMNP and Ward (Hanson 1942). This species is likely more common in the basin than our

records indicate. Additional collecting in high elevation habitats is required to further understand its distribution in the SPRB. Adults were present in July and August. Specimens were collected between 2814 m and 3600 m in elevation.

**Cultus aestivalis* (Needham and Claassen) 1925

Appendix B, page B24

Records: COLORADO, **Larimer Co**, *Cache la Poudre R*, Martinez Park Fort Collins, 1513 m, 5-VI-1996, A, CSUC; 16-VI-1999, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 30-V-1988, A, CSUC; 16-VI-1987, A, CSUC; 5.6 km W of Hwy 287 along Hwy 14, 1602 m, 1-II-2003, A, CSUC; *N Frk Cache la Poudre R*, at Poudre River Diversion, 1633 m, 14-VI-2005, A, CSUC.

Remarks: Within the SPRB this species is currently only known from the Cache la Poudre River near the plains mountain interface from Fort Collins upstream into the foothills. This species is likely more common than our records indicate as it is common the Colorado River basin (Kondratieff and Baumann 2002). Adults were present between May and July with an odd adult account from February. Specimens were collected between 1513 m and 1633 m in elevation.

Diura knowltoni (Frison) 1937

Appendix B, page B24

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Broadway Ave in Boulder, 1630 m, 1-X-1999, L; at Canyon mouth in Boulder, 1656 m, 1-X-1999, L; **Larimer Co**, *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 31-V-1986, A,

CSUC; 22-V-1987, A, CSUC; *Cache la Poudre R*, Dutch George Flats in Poudre Canyon 33.5 km W of Hwy 287, 1978 m, 17-III-1991, N, CSUC; *Fall R*, Estes Park, 2304 m, 15-VIII-1940, A, INHS; Endo Valley Cmpgrd RMNP, 2638 m, 9-IX-1954, A, INHS; *Glacier Crk*, RMNP, 2631 m, 17-VIII-1940, A, INHS; *Pennock Crk*, 2551 m, 63 E Rd and 44H Rd, 11-VI-2007, A, CSUC; *Young Gulch*, off Hwy 14 in Poudre Canyon, 1981 m, 14-VI-1979, L, CSUC; *Roaring Frk*, 1 km upstrm from Cache la Poudre R, 2425 m, 3-VII-2008, A, CSUC.

Remarks: This species has a wide geographical distribution but it is not common in any part of its range (Baumann et al. 1977, Call and Baumann 2002). Although adults are rarely collected, in some years larvae can be abundant in medium sized streams (Kondratieff and Baumann 2002). Adults were present May to September. Specimens were collected from 1630 m and 2638 m in elevation.

**Isogenoides elongatus* (Hagen) 1874

Appendix B, page B25

Records: COLORADO, **Boulder Co**, *S Boulder Crk* (Stark et al. 1973b); **Larimer Co**, *Cache la Poudre R*, 1883, A, USNM; VI-1889, A, CUIC; **Jefferson Co**, *Platte Canyon*, V (month of May), (Needham and Claassen 1925).

Remarks: *Isogenoides elongatus* is distributed throughout the western mountain states and can be relatively common in large rivers on the West Slope in Colorado (Sandberg and Stewart 2005). Apparently it was historically

present along the plains-mountain interface in large tributaries of the SPRB (Hanson 1943, Kondratieff and Baumann 2002). Hagen (1874) described this species from “Foot-hills, Colorado (Mr. Carpenter)”. Hanson (1943) indicated that the original description by Hagen (1874) was unrecognizable and redescribed the male from specimens from the “Platte Canyon” and “Poudre River” in Colorado. Baumann et al. (1977) indicated a record from Boulder County, it probably is the same record from Stark et al. (1973b). Water use practices and poor water quality likely eliminated this species from its historical locations along the Front Range of the SPRB as specimens have not been reported from the basin since 1889 (Kondratieff and Baumann 2002). Adults were apparently present in May and June in the Cache la Poudre River.

**Isoperla bilineata* (Say) 1823

(No figure associated with this species)

Records: COLORADO, (Needham and Claassen 1925).

Remarks: The validity of *I. bilineata* in Colorado is uncertain, but it is possible that *I. bilineata* once inhabited the plains streams of Colorado (Baumann et al. 1977, Szczytko and Stewart 1979, Ruse and Herrmann 2000, Kondratieff and Baumann 2002, Zuellig et al. 2006). Needham and Claassen (1925) first reported *I. bilineata* from Colorado but did not give locality information. Needham and Claassen deposited much of their material at the Cornell University Insect Collection, Ithaca, NY. Dr. E. Richard Hoebeke at Cornell University was contacted and reported that the specimens of *I. bilineata*

reported by Needham and Claassen (1925) were not in the known holdings of the Collection. If this record is valid, *I. bilineata* was likely collected from the plains portion of the SPRB based on its proximity of adult collections in north central Nebraska from the Mormon Canal, Cedar, North Loup, and Missouri Rivers (Kondratieff and Zuellig unpublished data, CSUC). Rhodes and Kondratieff (1996), however, did not report *I. bilineata* from the eastern tributaries of the South Platte River in Nebraska. Szczytko and Stewart (1978) designated a neotype and allotype.

Isoperla fulva Claassen 1937

Appendix B, page B25

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at 28th St in Boulder, 1613 m, 28-IX-1995, L; 1-X-1999, L; at Canyon mouth in Boulder, 1656 m, 13-IV-1995, L; 1-X-1999, L; at Broadway Ave in Boulder, 1630 m, 1-X-1999, L; 15-IV-1997, L; at 55th St in Boulder, 1583 m, 28-IX-1995, L; *Mid Boulder Crk*, nr Castle Rock E of Nederland, 2317 m, 14-III-2006, L, CSUC; *S Saint Vrain Crk*, Hwy 7 4.8 km from Hwy 36 in Lyons, 1753 m, 25-VI-2003, A, CSUC; 2-VII-2003, A, CSUC; Bohn Park Lyons at the confl with *N Saint Vrain Crk*, 1633 m, 26-VI-2003, A, CSUC; **Clear Creek Co**, *Clear Crk*, CR 306 I-70 exit 232, 2535 m, 9-VII-2003, A, CSUC; at Dumont, 2347 m, 29-VI-2005, A, CSUC; *W Frk Clear Crk*, Hwy 40 W of Empire upstrm from Blue Crk, 2901 m, 10-VII-2003, A, CSUC; *Chicago Crk*, at Idaho Springs, 2345 m, 29-VI-2005, A, CSUC; **Jefferson Co**, *Coal Crk*, Ranson at Edwards Ranch Open Space, 2012 m, 25-VI-2004, A, CSUC; *S Platte R*, 4.8 km off Waterton Rd in Platte Canyon, 1709

m, 6-IV-2008, L, CSUC; **Larimer Co**, *Cache la Poudre R*, Lions Park in Fort Collins Overland Trail Rd, 14-V-2007, 1544 m, A reared, CSUC; *Big Thompson R*, Hwy 34 at Drake, 1875 m, 8-VII-1998, A, CSUC; RMNP 180 m SE Bear Lake Rd, 2440 m, 6-VI-1985, L, CSUC; Estes Park, 2313 m, 2-VIII-1931, INHS; Hwy 34 2.2 km up from Drake, 1991 m, 25-VI-2003, A, CSUC; Hwy 34 in Big Thompson Canyon, 1611 m, 20-V-1997, L, CSUC; 8 km blw Estes Park, 2146 m, 10-VII-1997, A, CSUC; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 9-VI-2005, A, CSUC; 25-VI-2005, A, CSUC; *N Frk Big Thompson R*, CR 43 4.5 km upstrm from Drake, 1975 m, 25-VI-2003, A, CSUC; *Pingree Park*, 2743 m, 25-VIII-1923, INHS; *pond*, nr Hwy 14 & FR 156, 2899 m, 21-VII-1998, A, CSUC; **Park Co**, *Mosquito Crk*, FR 438/CR12 W of Park City, 3274 m, 9-VIII-2003, A, CSUC.

Remarks: *Isoperla fulva* is abundant in several montane and foothill streams of the SPRB. Adults were present between June and August. Specimens were collected between 1544 m and 3274 m in elevation.

Isoperla marlynia Needham and Claassen 1925

Appendix B, page B26

Records: COLORADO, **Sedgwick Co**, *S Platte R*, Hwy 385 at Julesburg, 1070 m, 24-I-2004, L, A, CSUC; NEBRASKA: **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 24-I-2004, L, A, CSUC; 18-III-2004, L, A, CSUC.

Remarks: This eastern North American species was previously known from the North Fork of the Republican River (Kondratieff and Baumann 2002), and more

recently was collected from the South Platte River at Julesburg, Colorado (Zuellig et al. 2006). Larvae were collected in January and emerged as adults in the laboratory in March. Specimens were collected between 865 m and 1070 m in elevation.

**Isoperla mormona* Banks 1920

Appendix B, page B26

Records: COLORADO, **Park Co**, *S Platte R*, Lake George, 2452 m, 22-VII-1938, INHS; 8-VIII-1943, A, INHS; *S Frk S Platte R*, nr confl Tarryall Res, 2502 m, 2-VII-1986, A, CSUC.

Remarks: This species of *Isoperla* is common in the Southern Rocky Mountains (Baumann et al. 1977). Adults were present in July and August. Specimens were collected between 2452 m and 2502 m in elevation.

Isoperla petersoni Needham and Claassen 1927

Appendix B, page B27

Records: COLORADO, **Boulder Co**, *S Frk Mid Boulder Crk*, at Hessie, 3190 m, 12-IX-1998, L, CSUC; *trib to S Boulder Crk*, Buckingham Cmpgrd 6.4 km NW Hessie, 3200 m, 12-IX-1998, A, CSUC; *Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, A, L, CSUC; **Clear Creek Co**, *seep blw Naylor Lake*, 3.2 km blw Guanella Pass, 3350 m, 15-VIII-2004, A, RWHD; 4-IX-2006, A, RWHD.

Remarks: This species is more common in northwestern North America and appears to reach its southern most range extension in Colorado (Baumann et al. 1977). Sandberg and Stewart (2001) discussed the life history of *I. petersoni*. Adults were present in August and September. Specimens were collected between 2975 m and 3350 m in elevation.

Isoperla pinta Frison 1937

Appendix B, page B27

Records: COLORADO, **Boulder Co**, *bog*, W of Red Rock Lake, 3102 m, 7-VII-1984, A, CSUC; *N Saint Vrain Crk*, Wild Basin RMNP, 2925 m, 18-VIII-1990, A, CSUC; **Larimer Co**, *Big Thompson R*, 8 km blw Estes Park, 2146 m, 10-VII-1997, A, CSUC; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 6-VI-2007, A, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 29-V-1987, A, CSUC; 14-V-2007, L, CSUC; Martinez Park Fort Collins, 1513 m, 16-VI-1999, A, CSUC; 2-V-1996, A, CSUC; *N Frk Cache la Poudre R*, Rd 74E, 1722 m, 7-IX-1996, A, CSUC; Phantom Canyon, 1627 m, 1-VI-2005, A, CSUC; *Little Thompson R*, Hwy 287 bridge, 1507 m, 24-IV-2000, L, CSUC.

Remarks: *Isoperla pinta* is considered an uncommon species in Colorado (Kondratieff and Baumann 2002). In the SPRB it is known from a relatively wide elevational gradient and is probably more common than these records indicate. Adults were present between May and September. Specimens were collected between 1527 m and 3102 m in elevation.

Isoperla quinquepunctata (Banks) 1902

Appendix B, page B28

Records: COLORADO, **Boulder Co**, *S Saint Vrain Crk*, Hwy 7 W of Lyons, 1652 m, 28-VII-1998, A, CSUC; **Douglas Co**, *West Crk*, 2277 m, 11-VIII-1958, INHS; **Elbert Co**, *Kiowa Crk*, at Elbert, 2047 m, 31-V-1986, L, CSUC; CR 174, 1824 m, 11-VI-1988, A, CSUC; **Jefferson Co**, *Clear Crk*, in Canyon, 1737 m, 7-VIII-1958, INHS; **Larimer Co**, *Big Thompson R*, Hwy 34 at canyon mouth at WWTP, 1611 m, 16-VII-1997, L, CSUC; *Box Elder Crk*, Red Mountain Open Space 0.8 km N of huge dam, 1544 m, 29-VI-2007, A, CSUC; *Cache la Poudre R*, Martinez Park Fort Collins, 1513 m, 16-VI-1999, A, CSUC; Lions Park Fort Collins, 1544 m, 4-V-2007, A, CSUC; Hwy 14 in Cache la Poudre Canyon, 1602 m, 19-VII-1976, A, CSUC; blw confl Corral Crk, 2955 m, 17-IX-1988, A, CSUC; 5.6 km W of Hwy 287 at Hwy 14, 1602 m, 1-VII-2003, A, CSUC; *N Frk Cache la Poudre R*, at Poudre R Diversion, 1633 m, 14-VI-2005, A, CSUC; just blw Halligan Res, 1928 m, 26-IX-1997, L, CSUC; *spring*, Howard Evans Home Glacier View subdivision nr Fort Collins, 2670 m, 1-VIII-1986, L, CSUC; *Shields Pond*, Fort Collins, 1543 m, 5-VII-1991, A, CSUC; *W Lone Tree Crk*, 10 km SE of Virginia Dale Hwy 287, 2014 m, 6-VI-1994, L, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 17-VII-1995, A, CSUC; *S Platte R*, Hartsel, 2701 m, 22-VII-1938, INHS; 27-VI-2003, A, RWHD; Lake George, 2414 m, 27-VII-1938, INHS; *S Frk S Platte R*, nr confl Tarryall Crk, 2502 m, 2-VII-1986, A, CSUC; Knight-Imler SWA, 2802 m, 13-VIII-1996, A, CSUC; **Teller Co**, *Rule Crk*, N of Woodland Park, 2436 m, 4-VIII-1987, A,

CSUC; **Sedgwick Co**, *S Platte R*, at Julesburg, 1064 m, 22-VI-2007, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 18-III-2004, A, L, CSUC.

Remarks: *Isoperla quinquepunctata* is the most common *Isoperla* species in the SPRB, reported from most major tributaries of the South Platte River and many small streams. This species is apparently adapted to a wide variety of naturally harsh conditions and tolerant of anthropogenic alterations on the plains streams. Both half-winged and fully winged males occur in these populations (Kondratieff and Baumann 2002). Adults were present between March and September. This species displays one of the widest elevational distributions of all stoneflies in the SPRB, collected between 865 m and 2955 m in elevation.

Isoperla sobria (Hagen) 1874

Appendix B, page B28

Records: COLORADO, **Boulder Co**, *pond*, W of Long Lake trailhead W of Brainard Lake, 3200 m, 31-VII-1998, A, CSUC; *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; Camp Dick abv Peaceful Valley, 2608 m, 4-VII-1997, A, CSUC; **Clear Creek Co**, *Cascade Crk*, Cascade Crk Rd 0.8 km upstrm from Hwy 103 just SW of Idaho Springs, 2674 m, 27-VI-2007, A, CSUC; *seep blw Naylor Lake*, 3.2 km blw Guanella Pass, 3350 m, 15-VIII-2004, A, RWHD; *S Clear Crk*, 1.6 km blw Guanella Pass, 3350 m, 15-VIII-2004, A, RWHD; **Larimer Co**, *Big Thompson R*, Moraine Park RMNP, 2456 m,

25-VII-1999, A, CSUC; *Chasm Falls*, RMNP, 2773 m, 27-VII-1938, INHS; *S Frk Cache la Poudre R*, Mummy Pass, 3415 m, 29-VII-2003, A, CSUC; *Fall R*, Endo Valley Picnic Area RMNP, 2642 m, 13-VII-1993, A, CSUC; 25-VI-1985, L, CSUC; *Fall Crk*, Cirque Meadow nr Pingree Park, 2988 m, 13-VI-2008, L, CSUC; *Icy Brk*, Loch Vale blw Timberline Falls RMNP, 3208 m, 5-VII-1988, A, CSUC; RMNP, 3103 m, 5-VII-1988, L, CSUC.

Remarks: This is the higher elevation *Isoperla* species of the SPRB originally described from specimens collected in "Colorado Mountains, Pacific Slope" (Hagen 1874). Larvae are uncommonly collected. Adults were present June to August. Specimens were collected between 2456 m and 3415 m in elevation.

Kogotus modesta (Banks) 1908

Appendix B, page B29

Records: COLORADO, **Boulder Co**, *N Frk Boulder Crk*, Green Lakes, 3406 m, 14-VIII-1990, A, CSUC; *trib to Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, A, CSUC; *Mitchell Crk*, nr trailhead, 3199 m, 22-VIII-1996, A, CSUC; *S Frk Mid Boulder Crk*, at Hessie, 3190 m, 12-IX-1998, A, CSUC; CU Science Lodge, 2899 m, 28-VI-1939, INHS; **Clear Creek Co**, *Bear Crk*, at Camp Rock Cmpgrd W of Evergreen, 2683 m, 10-VII-2005, A, RWHD; *seep blw Naylor Lake*, nr Guanella Pass, 3395 m, 15-VIII-2004, A, RWHD; *S Frk Clear Crk*, 1.6 km blw Guanella Pass, 3350 m, 15-VIII-2004, A, RWHD; *trib to S Clear Crk*, at Guanella Pass Cmpgrd, 3283 m, 4-IX-2006, A, RWHD; **Larimer Co**, *Bear Lake*, RMNP, 2909 m, 17-VII-1939, INHS; *Big Thompson R*, blw

Moraine Park nr Estes Park, 2440 m, 8-VIII-1996, L, USGSNWQL; *Fall R*, Lawn Lake Trailhead RMNP, 2598 m, 22-VII-1987, L, CSUC; Endo Valley Picnic Area RMNP, 2642 m, 30-VIII-1990, A, CSUC; 16-VIII-1940, INHS; *Glacier Crk*, RMNP, 2631 m, 17-VIII-1940, INHS; *Pingree Park*, 2743 m, 15-22-VIII-1924, INHS; **Park Co**, *Deer Crk*, abv Highland Park, 2783 m, 23-VII-2006, A, RWHD; *4 Mile Crk*, FR 421/CR18 S of Fairplay, 3304 m, 29-VIII-2003, A, CSUC; *Mosquito Crk*, FR 438/CR12 W of Park City, 3274 m, 29-VIII-2003, A, CSUC; 9-VIII-2003, A, CSUC.

Remarks: This species was originally described from Boulder, Colorado (Banks 1908). It is a common late season emerging stonefly of the higher elevations of the SPRB (Kondratieff and Baumann 2002). Adults were present in July and September. Specimens were collected between 2440 m and 3406 m in elevation.

Megarcys signata (Hagen) 1874

Appendix B, page B29

Records: COLORADO, **Boulder Co**, *Chasm Lake*, outlet strm Chasm Lake RMNP, 3536 m, 16-VII-1994, L, CSUC; *Cony Crk*, blw Hutcheson Lake RMNP, 3308 m, 12-VIII-2006, A, RWHD; *Mid Saint Vrain Crk*, FR 114 W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; *trib to Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, L, CSUC; **Clear Creek Co**, *Bear Crk*, at Rock Crk Cmpgrd W of Evergreen, 2682 m, 10-VII-2005, A, RWHD; *Clear Crk*, abv Lower Cabin Crk Res, 3058 m, 14-VI-2002, A, RWHD; *Hoop Crk*, 8.8 km W of

Empire just off Hwy 40, 2937 m, 28-I-2008, L, CSUC; *unnamed trib to S Clear Crk*, at Guanella Crk Cmpgrd nr Guanella Pass, 3325 m, 9-VII-2005, A, RWHD; *unnamed Trib to Bear Crk*, at Mt Evans SWA, 2552 m, 17-VI-2001, L, RWHD; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, A, CSUC; Rollinsville, 2562 m, 19-VI-1986, A, CSUC; Moffat Tunnel, 2811 m, 2-VII-1989, A, CSUC; **Larimer Co**, *Fall R*, 0.4 km E Endo Valley Picnic Area RMNP, 2637 m, 11-VI-1985, L, CSUC; 15-VIII-1940, INHS; *Chasm Falls*, RMNP, 2773 m, 27-VII-1938, INHS; *Glacier Crk*, RMNP, 2631 m, 25-VII-1938, INHS; *Big Thompson R*, blw Moraine Park nr Estes Park, 2440 m, 13-IX-1995, L, USGSNWQL; *Inn Brk*, nr Battle Creek Cmpgrd RMNP, 3353 m, 8-VII-2008, L, CSUC; **Park Co**, *Buckskin Crk*, FR 416 W of Alma, 3207 m, 10-VII-2003, A, CSUC; *Deer Crk*, abv Highland Park, 2782 m, 23-V-2004, A, RWHD; *4 Mile Crk*, 17 km W of Fairplay, 3197 m, 13-VII-2000, A, CSUC; *S Frk S Platte R*, just blw Weston Pass Cmpgrd Pike NF, 3051 m, 12-VI-2004, A, RWHD.

Remarks: Larvae of this species are large predatory stoneflies of higher elevation streams and can often be found in relatively high densities in the SPRB and Colorado (VanWieren et al. 2001). Hagen (1874) described this species from specimens labeled from "Foot-hills, Colorado, September". Adults were present between May and August. Specimens were collected between 2440 m and 3536 m in elevation.

Pictetiella expansa (Banks) 1920

Appendix B, page B30

Records: COLORADO, **Larimer Co**, *Fall R*, 0.4 km E Endo Valley Picnic Area RMNP, 2637 m, 9-VII-1985, L, CSUC; *Icy Brk*, abv The Loch RMNP, 3103 m, 2-VIII-1988, A, CSUC; 27-VIII-1999, L, CSUC; Loch Vale blw Timberline Falls RMNP, 3208 m, 5-VII-1988, L, CSUC; **Park Co**, *N Frk S Platte R*, Grant, 2998 m, 1920.

Remarks: This late emerging stonefly can have adults present into October (Baumann and Kondratieff 2002). It was described from the higher elevations of the SPRB at Grant, Colorado (Banks 1920); however, it is apparently uncommon in the SPRB. Baumann et al. (1977) provided a record from Gilpin County, Colorado. Adults were present in July and August. Specimens were collected between 2637 m to 3208 m in elevation.

Skwala americana (Klapálek) 1912

Appendix B, page B30

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Boulder, 1619 m, 21-III-1943, INHS; at Canyon mouth in Boulder, 1656 m, 28-IX-1995, L; 3-X-1996, L; at 55th St in Boulder, 1584 m, 28-IX-1995, L; 1-X-1999, L; at 28th St in Boulder, 1613 m, 26-IX-1996, L; 30-IX-1997, L; at Broadway Ave in Boulder, 1630 m, 30-IX-1997, L; *S Boulder Crk*, at Baseline Rd, 1609 m, 26-IX-1996, L; Mesa Trailhead 2.7 km W of Hwy 193, 1759 m, 12-IV-1995, A, CSUC; *Little Thompson R*, 8 km SW of Berthoud on 83rd St, 1559 m, 9-II-2008, L, CSUC; *St*

Vrain Crk, Hwy 66 at Lyons, 1646 m, 5-V-2005, 7-IV-2005, A, CSUC; **Clear Creek Co**, *Clear Crk*, CR 306 S of I-70, 2535 m, 5-IV-2003, A, CSUC; **Douglas Co**, *S Platte R*, nr Oxyoke, 1922 m, 12-IV-2003, A, RWHD; N of Nighthawk, 1892 m, 18-III-2006, A, CSUC; **Jefferson Co**, *Goose Crk*, at Goose Crk Cmpgrd, 2368 m, 4-IV-2004, A, RWHD; *S Platte R*, 4.8 km off Waterton Rd in Platte Canyon, 1709 m, 6-IV-2008, L, CSUC; *N Frk S Platte R*, Pine Ranch Jefferson County Open Space nr Pine, 2103 m, 27-III-2005, L, RWHD; **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 28-IV-1990, L, CSUC; 17-IV-2005, A, CSUC; *Beaver Crk*, RMNP, 2492 m, 10-IV-1954, A, INHS; *Endo Valley Cmpgrd*, RMNP, 2638 m, 9-IX-1954, INHS; *Buckhorn Crk*, 38.4 km N of Masonville, 1812 m, 20-IV-1987, A, CSUC; 6.4 km N Masonville, 1695 m, 31-I-1987, L, CSUC; nr confl Fish Crk, 1832 m, 27-III-1986, L, CSUC; 10-IX-1954, INHS; 40 km N of Masonville, 1956 m, 27-IX-1989, INHS; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 8-IV-1987, A, CSUC; 3-IV-1987, A, CSUC; Hwy 14 at Upper Landing, 2134 m, 25-VIII-2006, L, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 16-V-1993, A, CSUC; no location available, 23-III-2004, L, CSUC; *Dale Crk*, Hwy 287, 2059 m, 26-IV-1992, A, CSUC; *Elkhorn Crk*, Hwy 14 Cache la Poudre Canyon, 1975 m, 6-V-2004, A, CSUC; *Glacier Crk*, YMCA of the Rockies at Estes Park, 2477 m, 24-IV-2005, A, CSUC; *Skin Gulch*, Stove Prairie Rd 1.6 km S of Hwy 14, 1892 m, 8-V-1993, L, CSUC.

Remarks: Records reported prior to 1989 were recorded as *Isogenus* then *Skwala parallela* (Frison) which were later synonymized with *S. americana*

(Klapálek) by Zwick (1989). Adults were present from March through May in the SPRB. Specimens were collected between 1544 m and 2638 m in elevation.

Pteronarcyidae (Giant Stoneflies)

Pteronarcella badia (Hagen) 1874

Appendix B, page B31

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at canyon mouth in Boulder, 1656 m, 13-IV-1995, L; 1-X-1999, L; Boulder Canyon Hwy 119, 1667 m, 2-VII-1995, A, CSUC; 14-IV-1998, L, CSUC; at Broadway Ave in Boulder, 1630 m, 1-X-1999, L; at 55th St in Boulder, 1583 m, 15-IV-1997, L; at Broadway Ave in Boulder, 1630 m, 15-IV-1997, L; at 28th St in Boulder, 1613 m, 14-IV-1998, L; at Boulder, 1619 m, 27-VII-1943, INHS; *S Boulder Crk*, Mesa Trailhead, 1759 m, 12-IV-1995, A, CSUC; *Dry Crk*, abv Baseline Rd nr Boulder, 1606 m, 30-VI-2003, L, USGSNWQL; *4 Mile Crk*, at confl with Boulder Crk, 1749 m, 20-II-1943, INHS; *N Saint Vrain Crk*, nr Lyons, 1658 m, 18-II-1943, INHS; **Jefferson Co**, *Clear Crk*, at Golden, 1736 m, 11-VIII-1994, L, USGSNWQL; 23-VIII-1993, L, USGSNWQL; *Goose Crk*, at Goose Crk Cmpgrd, 2368 m, 4-IV-2004, A, RWHD; *Kennedy Gulch*, at Reynolds Park 8 km from Conifer, 2229 m, 8-VI-2004, A, RWHD; 28-IV-2002, L, RWHD; *North Frk S Platte R*, at Pine Ranch Jefferson County Open Space nr Pine, 2103 m, 27-III-2005, L, RWHD; **Larimer Co**, *Beaver Crk*, RMNP, 2492 m, 10-IX-1954, INHS; *Big Thompson R*, 180 m SE Bear Lake Rd RMNP, 2440 m, 20-VI-1985, L, CSUC; RNMP, 17-VIII-1940, INHS; Estes Park, 2313 m, 18-II-1943, INHS; *Fall R*, Estes Park, 2304 m, 15-

VIII-1940, INHS; *N Frk Big Thompson R*, 4 km upstrm of Drake, 1982 m, 2-IX-2001, L, RWHD; *Buckhorn Crk*, 40 km W of Masonville, 1956 m, 27-IX-1989, INHS; CR 27, 1608 m, 31-I-1987, L, CSUC; *Cache la Poudre R*, Hwy 14 nr confl Young Gulch, 1765 m, 10-V-1986, A, CSUC; Hwy 14 1.6 km dwnstrm from Spencer Heights, 2383 m, 6-VII-2003, A, CSUC; Station 21, 2524 m, 28-VII-1976, A, CSUC; *Sheep Crk*, Upper Cherokee Park, 2223 m, 15-VII-1991, A, CSUC; *Young Gulch*, Hwy 14 Cache la Poudre Canyon, 1769 m, 1-VII-1987, L, CSUC; **Park Co**, *Mid Frk S Platte R*, nr Garo, 2807 m, 9-VII-2004, A, RWHD.

Remarks: A common stonefly in tributaries of the SPRB. This species is considered to have a two year life cycle with a 9-10 month inactive egg stage (DeWalt and Stewart 1995). Adults were present between April and July. Specimens were collected between 1583 m and 2807 m in elevation.

Pteronarcys californica Newport 1948

Appendix B, page B31

Records: COLORADO, **Douglas Co**, *S Platte R*, blw Waterton Canyon, 1829 m, 10-VIII-2006, L, RWHD; **Larimer Co**, *Big Thompson R*, 8 km dwnstrm of Estes Park, 2146 m, 21-VI-1998, A, CSUC; Estes Park, 2313 m, 14-VIII-1940, INHS; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 9-VI-2005, A, CSUC; 13-VI-2005, A, CSUC; *N Frk Big Thompson R*, 4 km upstrm of Drake, 1982 m, 2-IX-2001, L, RWHD; *Cache la Poudre R*, Hwy 14 at Upper Landing, 2134 m, 25-VIII-2006, L, CSUC; 5.6 km past cattleguard at Hwy 14, 22-IX-2007, L, CSUC; Fort Collins Lions Park Overland Trail Rd, 1544 m, 22-V-1987, A,

CSUC; 8-IX-2004, L, CSUC; Hwy 14 Young Gulch at Ansel Watrous Cmpgrd, 1769 m, 15-IV-1986, L, CSUC; Martinez Park Fort Collins, 1513 m, 19-V-1998, A, CSUC; Hwy 14 mile marker 106, 1652 m, 23-X-1999, L, CSUC; at mouth of canyon nr Fort Collins, 1594 m, 13-IX-1995, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL.

Remarks: The famous salmon or willow fly does not apparently occur in large populations in the SPRB as in other parts of its range in Colorado (Kondratieff and Baumann 2002). Larval development of this species can last up to 4 years (Townsend and Pritchard 1998). Adults were present in May and June.

Specimens were collected between 1513 m and 2313 m in elevation.

Pteronarcys pictetii Hagen 1873

Appendix B, page B32

Records: COLORADO, **Sedgwick Co**, *S Platte R*, Hwy 385 at Julesburg, 1070 m, 24-I-2004, L, A reared emerged 1-IV-2008, CSUC; 7-III-2008, L, CSUC; Julesburg SWA near Ovid, 1077 m, 20-VII-2007, exuvium, CSUC; 22-VI-2007, L, CSUC; NEBRASKA, **Deuel Co**, *S Platte R*, nr Big Springs, 1098 m, 7-III-2008, L, CSUC; **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 12-IV-2004, A, reared, CSUC.

Remarks: *Pteronarcys pictetii* was reported in Colorado for the first time by Zuellig et al. (2006) and previously reported from the neighboring states of Kansas and Nebraska (Stewart and Huggins 1977, Rhodes and Kondratieff 1996). Adults in the South Platte River were present in April; reared adults

emerged in late March and early April. Specimens were collected between 1098 m and 865 m in elevation.

Taeniopterygidae (Winter Stoneflies, Willowflies)

Doddsia occidentalis (Banks) 1900

Appendix B, page B32

Records: COLORADO, **Clear Creek Co**, *Blue Crk*, nr Hwy 40 nr Empire, 2851 m, 15-V-2005, A, RWHD; *Clear Crk*, nr Spring Crk, 2395 m, 10-IV-1996, L, CSUC; *Hoop Crk*, nr Berthoud Pass, 3170 m, 16-V-2004, A, RWHD; 29-VI-2005, A, CSUC; Hwy 40 nr Empire, 2638 m, 16-V-2004, A, CSUC; **Gilpin Co**, *S Boulder Crk*, 3.2 km W of Tolland, 2779 m, 7-VII-1991, A, CSUC.

Remarks: This western North American winter stonefly is restricted to relatively high elevation streams of the SPRB. Adults were present between May and July. Specimens were collected from 2395 m and 3170 m in elevation.

**Taenionema pacifica* (Banks) 1900

Appendix B, page B33

Records: COLORADO, **Boulder Co**, Boulder, 1619 m, 30-III to 4-IV-?, A, MCZC; 1907, A, CUIC; 2-III-?, A, MCZC; **Larimer Co**, Fort Collins, 1508 m, 31-III-?, A, MCZC (Stanger and Baumann 1993).

Remarks: This species, like *Isogenoides elongatus*, historically occurred in the SPRB from the foothills transition zone where intense urban development and water diversions have occurred. It also has probably been extirpated by altered

hydrology and poor water quality due to contemporary water use practices. It is still present on the Western Slope of Colorado and nearby mountain states (Baumann et al. 1977, Kondratieff and Baumann 2002, Call and Baumann 2002, USGS 2006). Unfortunately, the years of the collection dates for some of these records were not available (Needham and Claassen 1925). In the SPRB specimens were historically collected from elevations between 1508 m and 1619 m. Adults were reported to be present in March and April.

Taenionema pallidum (Banks) 1902

Appendix B, page B33

Records: COLORADO, **Boulder Co**, *James Crk*, at Jamestown, 1951 m, 1-VI-2005, A, CSUC; *Longs Peak*, RMNP, 3556 m, 12-VI-1937, INHS; *Mid Saint Vrain Crk*, Camp Dick Access Rd just off of Hwy 72, 2634 m, 25-VI-2003, A, CSUC; Camp Dick abv Peaceful Valley, 2608 m, 4-VII-1999, A, CSUC; **Clear Creek Co**, *Clear Creek*, abv Lower Cabin Creek Res, 3039 m, 14-VI-2002, A, RWHD; *W Frk Clear Crk*, Hwy 40 W of Empire just upstrm from Blue Crk, 2901 m, 9-VII-2003, A, CSUC; *seep blw Naylor Lake*, nr Guanella Pass, 3158 m, 29-VI-2003, A, RWHD; **Larimer Co**, *S Frk Cache la Poudre R*, B. Simpson home, 1993 m, 25-V-1986, A, CSUC; *Chasm Falls*, RMNP, 2773 m, 27-VII-1938, INHS; *Fall R*, 1.6 km E of Hidden Valley Rd nr Estes Park, 2620 m, 16-VI-2007, A, CSUC; *Little Beaver Crk*, nr 63E Rd, 2411 m, 5-VI-1996, A, CSUC; *Mill Crk*, Estes Park RMNP, 2544 m, 11-VI-1937, INHS; *Fall R*, 0.4 km E Endo Valley Picnic Area RMNP, 2637 m, 11-VI-1985, L, CSUC; *Miller Frk*, 1.5 mi NE of Glen Haven on FR 126, 2147 m, 20-V-2007, A, CSUC; *Pennock Crk*, CR 63

and 44H Rd, 2551 m, 11-VI-2007, A, CSUC; **Park Co**, 4 Mile Crk, FR 421/CR18 S of Fairplay, 3304 m, 10-VII-2003, A, CSUC; *Deer Crk*, abv Highland Park, 2782 m, 23-V-2004, A, RWHD; *Duck Crk*, blw Duck Lake nr Guanella Pass, 3394 m, 29-VI-2003, A, RWHD; *S Frk S Platte R*, just blw Weston Pass Cmpgrd Pike NF, 3051 m, 12-VI-2004, A, RWHD.

Remarks: This species is typical of the montane region of the SPRB in Colorado and is usually associated with medium sized streams (Kondratieff and Baumann 2002). Adults were present from May to July. Specimens were collected between 1951 m and 3556 m in elevation.

**Taeniopteryx burksi* Ricker and Ross 1968

Appendix B, page B34

Records: NEBRASKA, **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 18-III-2004, A, L, CSUC.

Remarks: This species was collected and reared from the South Platte River in North Platte, Nebraska. It is likely *T. burksi* will be collected from the northeastern portion of the SPRB in Colorado. Kondratieff and Ward (1987) reported Colorado localities for this species from the North and South Forks of the Republican River and Chief Creek just south of the SPRB. Adults were present in March. Specimens were collected at 865 m elevation.

Discussion Stoneflies (Plecoptera)

Eight families, 38 genera, and 66 species of stoneflies (Table 4) are reported from 1,210 collection records from 392 unique collection locations in

the SPRB. Thirteen species were originally described from specimens collected in the SPRB. Four families accounted for 79 percent of the stonefly diversity in the SPRB with 52 species. The most diverse family, Perlodidae, was represented by 16 species making up 23 percent of the stonefly diversity. *Sweltsa lambda*, *Zapada cinctipes*, and *Claassenia sabulosa* were the most commonly reported stoneflies. The Arapahoe Snowfly, *Capnia arapahoe*, is the only known endemic stonefly in the SPRB.

Stoneflies were collected at all elevations of the SPRB. Diversity decreased west to east from the mountains and foothills transition zone out onto the plains. Of the 66 stonefly species reported in the SPRB 48 were collected from mountain locations, 46 from the foothills transition zone, and seven from the plains (Table 5). Thirty-two species were restricted to one of the three physiographic provinces. *Isoperla quinquepunctata* displayed the widest elevational distribution from the eastern edge of the SPRB at 865 meters towards the southwest portion at 2,840 meters. *Capnia confusa* also had a wide elevational distribution from 1,319 meters to 2,977 meters. Several species, such as *Arcynopteryx compacta* and *Capnia arapahoe*, appeared to be highly restricted in elevation possibly due to narrow ecological requirements.

The highest stonefly diversity in the SPRB was in the mountains with records of 16 species reported to occur only above 2,500 meters (Table 5). Three species, *Arcynopteryx compacta*, *Megarcys signata*, and *Taenionema pallidum*, were reported from above 3,500 meters. Seven stonefly species were reported from the plains with three of those, *Pteronarcys pictetii*, *Taeniopteryx*

burksi, and *Isoperla marlynia* apparently restricted to the plains having more eastern North American affinities (Zuellig et al. 2006). The foothills transition zone harbored 46 stonefly species with 12 of those reported only from this physiographic province. Four stoneflies associated with the plains and 33 species associated with the mountains co-occurred in the foothills where they apparently find their ecological limits, partially explaining the high diversity in of foothill streams in the SPRB (Ward 1982).

Adult stonefly specimens in the SPRB were reported every month except November and December (Table 6). Based on the available records, the highest number of adult stonefly species peaked in June and July. Adults of *Isoperla quinquepunctata* and *Triznaka pintada* were present for the longest time period (March through September), while adults of two winter stoneflies, *Capnia gracilaria* and *Capnia decepta*, were present from February through June, depending on elevation.

Similar to the mayflies, apparent stonefly extirpations have occurred mostly in the foothills transition zone while on the plains eastern affiliated stonefly species seem to be expanding their populations westward (Zuellig et al. 2006). Two stonefly species, *Taenionema pacifica* and *Isogenoides elongatus*, were historically collected from the current day urban areas of Boulder and Fort Collins, Colorado and last reported in 1907 and 1889, respectively. However, with no early historical data or systematic sampling, it is unclear whether the lack of contemporary records is due to anthropogenic effects or an artifact of collecting inherent to this data set. The winter stonefly

Capnia vernalis was previously known from two records in the SPRB from the South Platte River at Littleton and Deckers, Colorado from 1943 and 1986. The third record, presented in this paper, was collected from the South Platte River downstream from Deckers in February 2009. The stonefly *Perlesta decipiens* was abundant in the South Platte River east of Weld County, Colorado but was not collected in the same river west of Weld County, possibly due to decreased water quality downstream from the Denver metropolitan area. Populations of *Perlesta decipiens* occurred in a few foothills transition zone streams in Jefferson and Larimer Counties, Colorado. The only endemic stonefly to the SPRB, *Capnia arapahoe*, was described from two male specimens from two small tributaries of the Cache la Poudre River (Nelson and Kondratieff 1988). It was not reported again until March and April of 2009 when thirteen specimens, including the previously unknown female were collected from the type locality (Heinold and Kondratieff in press). This species is currently petitioned for emergency protection under the Federal Endangered Species Act (Mazzacano 2007, Blake Matheson Xerces Society personal communication). Another uncommon winter stonefly in the SPRB, *Isocapnia hyalita*, is only known from one record in the SPRB at Hoop Creek, a high elevation tributary of Clear Creek in Clear Creek County, Colorado. *Isoperla bilineata* was reported in Colorado in 1925 with no further data available. Several experts agree this historic record is likely valid and may have once been present on the plains portion of the SPRB in Colorado (Zuellig et al. 2006).

TRICHOPTERA (CADDISFLIES)

Apataniidae (Early Smoky Wing Sedges)

**Allomyia chama* (Denning) 1953

Appendix C, page C2

Records: COLORADO, **Larimer Co**, *S Frk Cache la Poudre R*, malaise trap 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 15-VII-2002, A, CSUC.

Remarks: The one SPRB record is from a high elevation, medium sized stream, typical of *Allomyia* species (Wiggins 1996). The adult was collected in July.

Allomyia gnathos (Ross) 1950

Appendix C, page C2

Records: COLORADO, **Boulder Co**, *N Frk Mid Boulder Crk*, Arapaho Pass Trail, 3087 m, 28-VII-1995, A, CSUC; **Clear Creek Co**, *Leavenworth Crk*, between Waldorf & upstrm mine (Vidler) upstrm from Rd at old diversion, 3484 m, 4-VII-1980, A, L, P, DERP; *crk*, nr Berthoud Pass, hwy 40, 3436 m, 5-VIII-1973, A, USNM; **Park Co**, *pool*, N side of road between Mosquito Crk & London Butte Mine, 3438 m, 19-VI-1980, A, DERP.

Remarks: This species occurs in small streams and springs at the highest elevations of the SPRB. They typically emerge early in the season, usually when there is still substantial snow on the ground. No taxonomic revision of the

genus *Allomyia* is available since Ross (1950) reviewed the genus, previously named *Imania* (Schmid 1980). Adults were present from June to August.

Specimens were collected between 3087 m and 3484 m in elevation.

**Allomyia tripunctata* (Banks) 1900

Appendix C, page C3

Records: COLORADO, **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 18-IV-1999, A, CSUC; *Cache la Poudre R*, 1.6 km E of Milner Pass, 3505 m, 30-VII-1995, A, CSUC; *unknown stream*, along Grey Rock trail, 1749 m, 7-IV-1996, A, CSUC.

Remarks: *Allomyia tripunctata* is another early season emerging caddisfly in the SPRB. These records indicate a much wider altitudinal distribution than the previous *Allomyia* species. Adult specimens of *A. tripunctata* are rarely collected either because it is not attracted to ultra-violet light traps or it is too cold for this species at such elevations for the adults to fly at night. Specimens were collected at elevations from 1749 m to 3505 m. Adults were present early April through July.

**Apatania zonella* (Zetterstedt) 1840

Appendix C, page C3

Records: COLORADO, **Boulder Co**, *Chasm Lake*, RMNP, 3749 m, 23-VII-2007, A, CSUC; 20-VII-1998, A, DERP; **Clear Creek Co**, *Summit Lake*, Mount Evans, 3858 m, 5-VII-1996, A, DERP.

Remarks: The few SPRB records available for this species are from high elevation lakes. Corbet (1966) believed *Apatania zonella* to be parthenogenic. Adults were present in July. Specimens were collected at elevations from 3749 m to 3858 m.

Brachycentridae (Log Cabin Case Maker Caddisflies)

Brachycentrus americanus (Banks) 1899

Appendix C, page C4

Records: COLORADO, **Boulder Co**, *Boulder Crk*, Broadway Ave in Boulder, 1630 m, 30-IX-1997, L; 1-X-1999, L; at Canyon mouth in Boulder, 1656 m, 13-IV-1995; 1-X-1999, L; at 55th St in Boulder, 1583 m, 28-IX-1995; 1-X-1999, L; at 28th St in Boulder, 1613 m, 13-IV-1995; 22-IX-1998, L; blw 61st St nr Boulder, 1569 m, 11-VII-2003, L, USGSNWQL; *N Frk Boulder Crk*, at Boulder Falls, 2183 m, 9-VIII-1981, A; *S Boulder Crk*, bridge blw Beaver Crk confl, 2463 m, 15-VIII-1981, A, INHS; Mesa Trailhead, 1759 m, 3-X-1995, A, CSUC; at Baseline Rd in Boulder, 1609 m, 26-IX-1996, L; *Mid Saint Vrain Crk*, btwn Riverside & Lyons, 2213 m, 15-VIII-1981, A, INHS; *N Saint Vrain Crk*, W of Lyons, 1690 m, 3-VII-1992, L, DERP; 6.4 km abv Lyons, 1725 m, 8-VIII-1975, A; *Saint Vrain Crk*, at Hwy 36, 1600 m, 15-VIII-1981, A, INHS; **Clear Creek Co**, *Clear Crk*, bridge at W end of Idaho Springs, 2314 m, 5-VII-1981, A, DERP; 3-VII-1981, A, L, DERP; at confl with W Frk Clear Crk, 2511 m, 3-VII-1981, L, DERP; *Pedee Crk*, at bridge, 2456 m, 20-VI-1981, L, DERP; *S Frk Clear Crk*, about 0.4 km dwnstrm from Georgetown water supply Res, 2810 m, 2-V-1981,

L, DERP; *W Frk Clear Crk*, at 1st bridge upstrm from Clear Crk confl, 2511 m, 10-VIII-1985, L, DERP; bridge at US 40 & I-70, 2497 m, 26-XII-1980, A, DERP; about 95 m upstrm from Clear Crk confl, 2506 m, 5-VII-1980, L, DERP;

Douglas Co, *Horse Crk*, just blw confl with Trout Crk, 2024 m, 1-VI-1985, L; *S Platte R*, at S Platte, 1859 m, 21-VII-1987, L, DERP; *Trout Crk*, CR 67, 2020 m, 17-IV-1982, L, DERP; **Jefferson Co**, *Bear Crk*, at Corwina Park Bridge, 2054 m, 24-V-1981, L, DERP; 29-VIII-1981, L, INHS; at Soda Lakes Rd, 1721 m, 24-IV-1982, L, DERP; 3.2 km abv Morrison, 1920 m, 15-VII-1982, L, DERP; bridge just abv Rosedale, 2248 m, 20-VI-1981, L, DERP; *Buffalo Crk*, at Forest Service Picnic Area, 2290 m, 23-VIII-1981, L, DERP; *Clear Crk*, at Golden, 1736 m, 11-VIII-1994, P, USGSNWQL; 24-VIII-1993, L, USGSNWQL; *Cold Spring Gulch*, at Hwy 74 bridge, 2035 m, 24-V-1981, L, DERP; *Cub Crk*, at Mount Dillon Park, 2192 m, 24-IV-1982, L, DERP; *Deer Crk*, at Phillipsburg, 1979 m, 23-VIII-1981, A, INHS; *Elk Crk*, Hwy 285 at Shaffers Crossing, 2420 m, 8-VIII-1973, A, USNM; *inlet to Evergreen Lake*, 2148 m, 20-VI-1981, L, DERP; *Mount Vernon Crk*, bridge at Morrison, 1757 m, 24-V-1981, L, P, DERP; *N Frk S Platte R*, at Riverview, 2009 m, 23-VIII-1981, A, INHS; *N Turkey Crk*, bridge just W of Hwy 285, 2109 m, 24-IV-1982, L, DERP; *S Platte R*, at bridge at inlet to Chatfield Res, 1656 m, 28-VI-1982, A, DERP; *S Turkey Crk*, bridge at Hwy 285 & S Turkey Crk Rd, 2067 m, 24-VI-1976, L, UCMC; *Troublesome Crk*, at Kittredge, 2094 m, 16-VII-1981, A, INHS; 24-IV-1982, L, DERP; **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 19-VII-1994, A, CSUC; blw Moraine Park nr Estes Park, 2440 m, 8-VIII-1996; 17-VII-

2002, L, USGSNWQL; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 13-VIII-1998, A, CSUC; *Buckhorn Crk*, 25.7 km abv Masonville, 2125 m, 15-IX-1999, A, CSUC; *Cache la Poudre R*, at Rustic, 2177 m, 28-VII-1995, A; mouth of Canyon nr Fort Collins, 1594 m, 13-IX-1995, L, USGSNWQL; Hwy 14 at Diamond Rock, 1820 m, 25-VIII-2007, L, CSUC; Hwy 14 at Upper Stove Prairie, 1843 m, 25-VIII-2007, L, CSUC; *Elkhorn Crk*, at confl with Cache la Poudre R Hwy 14, 1972 m, 19-VIII-1947, A, ESUW; *Fossil Crk*, golf course blw Lemay St in Fort Collins St, 1494 m, 10-VII-2000, A, CSUC; *7 Mile Crk*, about 1 km upstrm from Rustic, 2225 m, 28-VII-1995, A, CSUC; *S Frk Cache la Poudre R*, CR 63 E at Fish Crk, 2534 m, 4-IX-1993, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.5 km S of Fairplay, 2840 m, 18-VI-1995, L, CSUC; *S Frk S Platte R*, Knight-Imler SWA Hwy 285, 2802 m, 13-VIII-1996, A, CSUC; *Tarryall Crk*, at Spruce Cmpgrd, 2592 m, 17-IV-1982, L, DERP; **Teller Co**, *Rule Crk*, off Hwy 67 N of Woodland Park, 2436 m, 4-VIII-1987, A, CSUC.

Remarks: The female type locality of *B. similis* Banks, a synonym of *B. americanus*, is Boulder, Colorado (Banks 1907a). *Brachycentrus americanus* larvae usually build distinct square, tapered cases, while those of the following *Brachycentrus* species are usually slightly rounded. *Brachycentrus americanus* generally occurred at higher elevations and always emerged a month or two later than *B. occidentalis* Banks so they are not often collected together (Wiggins 1996). Adults were present between June and October. Specimens were collected at elevations between 1494 m and 2840 m.

Brachycentrus occidentalis Banks 1911

Appendix C, page C4

Records: COLORADO, **Adams Co**, *S Platte R*, at Henderson, 1525 m, 27-VIII-1993, L, USGSNWQL; **Boulder Co**, *Saint Vrain Crk*, Hwy 66 in Lyons, 1637 m, 7-VI-2005, A, CSUC; 25-VI-2005, A, CSUC; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, P, USGSNWQL; **Jefferson Co**, *S Platte R*, Kassler Bridge, 1682 m, 7-V-1994, A, DERP; **Larimer Co**, *Cache la Poudre R*, at mouth of canyon nr Fort Collins, 1594 m, 17-VII-1994, L, USGSNWQL; Martinez Park College Ave Fort Collins, 1513 m, 2-VI-1998, A, CSUC; 16-VI-1999, A, CSU; Fort Collins Lions Park Overland Trail Rd, 1544 m, 29-V-1987, A, CSUC; 4-IX-1996, P, CSUC; 5-VI-1998, A, CSUC; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; 16-IV-1970, A, CSU; **Park Co**, *High Crk*, High Crk Federal Preserve S of Fairplay, 2840 m, 13-VIII-1995, L, CSUC; *S Frk S Platte R*, 3.2 km blw Antero Res, 2717 m, 9-V-1981, *S Frk S Platte R*, 0.4 km blw Antero Res, 2718 m, 19-V-1981, A, CSUC.

Remarks: The adult emergence of this species is known by fly fishermen as the “Mother’s Day” caddis hatch on the Arkansas River in Colorado. David E.

Ruiter (personal communication) has seen massive hatches of this species halt traffic on interstate highways along the Colorado River, as smeared egg cases obscured windshields. Adults were present between April and June. Specimens were collected between 1508 m and 2840 m.

**Micrasema bactro* Ross 1938

Appendix C, page C5

Records: COLORADO, **Larimer Co**, *Lower Hidden Valley*, Picnic Area RMNP, 2611 m, 7-VIII-1995, A, CSUC; *7 Mile Crk*, about 1 km upstrm from Rustic Hwy 14, 2225 m, 28-VII-1995, A, Malicky.

Remarks: These were the only records for this species available from the SPRB. Larvae apparently occur among root wads along the banks of small streams. Adults were present between July and August. Specimens were collected between 2225 m and 2611 m in elevation.

Glossosomatidae (Saddle Case Making Caddisflies)

Agapetus boulderensis Milne 1936

Appendix C, page C5

Records: COLORADO, **Boulder Co**, *Boulder Crk*, Boulder Canyon Mouth in Boulder, 1656 m, 14-IV-1998, L; at Broadway Ave in Boulder, 1630 m, 14-IV-1998, L; at 28th St in Boulder, 1613 m, 22-IX-1998, L; *S Boulder Crk*, Mesa Trailhead, 1759 m, 3-X-1995, A, CSUC; at Lafayette, 1614 m, 3-X-1995, A, CSUC; along *S Boulder Crk*, ? m, 25-IX-2006, L, CSUC; *N Saint Vrain Crk*, Applewood Rd abv Lyons, 1690 m, 11-IX-1977, A, CSUC; 6.4 km abv Lyons, 1725 m, 12-IX-1976, A; **Jefferson Co**, *Buffalo Crk*, FS Picnic Area, 2290 m, 23-VIII-1981, L, DERP; *Deer Crk*, at Phillipsburg, 1979 m, 23-VIII-1981, A, DERP; *Elk Crk*, Hwy 285 at Shaffers Crossing, 2421 m, 8-VIII-1973, A, USNM; *Turkey Crk*, nr Aspen Park, 2445 m, 8-VIII-1973, A, USNM; **Larimer Co**, *Big*

Thompson R, 3.2 km dwnstrm of Olympus Dam, 2239 m, 21-IX-1996, A, CSUC; *Buckhorn Crk*, 32.2 km N of Masonville, 2033 m, 2-X-1986, A, CSUC; *Cache la Poudre R*, 9.7 km abv Hwy 287 on Hwy 14, 1652 m, 31-VIII-1996, A, CSUC; 3.2 km abv Poudre Park, 1761 m, 14-VIII-1976, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 16-VII-1997, A, CSUC; *N Poudre Canal #1*, Cherokee Park Rd/CR 80C, 1742 m, 8-VIII-1996, A, CSUC; *Swamp Crk*, at FR 162, 2649 m, 28-VII-1995, A, DERP; *S Frk Cache la Poudre R*, 3.5 mi NW of Box Prairie, 11-IX-2007, 2504 m, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.5 km S of Fairplay, 2840 m, 17-VII-1995, L, CSUC; 13-VIII-1995, A, P, CSUC; *S Frk S Platte R*, Knight-Imbler SWA Hwy 285, 2802 m, 13-VIII-1996, A, CSUC; **Teller Co**, *Rule Crk*, off Hwy 67 N of Woodland Park, 2436 m, 4-VIII-1987, A, CSUC.

Remarks: This small black caddisfly was described from Boulder, Colorado (Milne 1936) which appears to be the lower elevation limit for the species. Specimens were collected between 1613 m and 2840 m in elevation. Adults were present between August and October.

Anagapetus debilis (Ross) 1938

Appendix C, page C6

Records: COLORADO, **Boulder Co**, *4 Mile Crk*, nr Hwy 72, 2809 m, 28-VII-1998, A, CSUC; *Mid Saint Vrain Crk*, FR 114, W of Peaceful Valley, 2636 m, 17-VII-1993, A, CSUC; *Rock Crk*, Hwy 7, 2487 m, 19-VI-1986, A, CSUC; **Clear Creek Co**, *Chicago Crk*, bridge at W Chicago Crk confl, 2682 m, 21-VI-1981, A,

DERP; *W Chicago Crk*, cmpgrd at end of FR 188 about 13 km SW of Idaho Springs, 3012 m, 27-VI-2007, A, CSUC; **Douglas Co**, seep, entering S Platte R from E in Cheesman Canyon, 1981 m, 13-VI-1982, A, DERP; *Jarre Crk*, 8 km SW of Sedalia on Hwy 67, 2070 m, 27-VI-2007, A, CSUC; **Larimer Co**, *Hidden Valley*, Picnic Area RMNP, 2611 m, 2-VII-1990, A, CSUC.

Remarks: This species is seldom collected in large numbers, and the larvae appear to be restricted to spring sources. Specimens were collected between 1981 m and 3012 m in elevation. Adults were present in June and July.

Culoptila thoracica (Ross) 1938

Appendix C, page C6

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at mouth of Boulder Canyon, 1829 m, 25-IX-2007, L, CSUC; *S Boulder Crk*, 25-IX-2006, L; **Clear Creek Co**, nr Loveland Pass, 3149 m, 1-VIII-1973, A, USNM; **Douglas Co**, *BLT*, Deckers Resort, 1950 m, 23-VIII-1988, A, CSUC; **Jefferson Co**, *Bear Crk*, about 3.2 km abv Morrison, 1920 m, 15-VII-1982, A, DERP; *BLT*, at Idledale, 1979 m, 2-VII-1982, A, CSUC; **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 19-VII-1994, A, CSUC; *Cache la Poudre R*, just blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; Hwy 14 9.6 km upstrm of Hwy 287, 1652 m, 15-VII-1996, A, CSUC; *N Frk Big Thompson R*, Picnic Area 1.6 km SE Glen Haven in Roosevelt NF, 2246 m, 22-VII-1994, A, CSUC.

Remarks: This is the smallest saddlecase making caddisfly in the SPRB. While *Culoptila* is a tropical genus (Wichard et al. 2006), typical of warmer, large

stream habits, this species was found at mid-elevation streams but has not been collected in the lower, warm reaches of the SPRB. Specimens were collected between 1640 m and 3149 m in elevation. Adults were present between July and August.

**Glossosoma alascense* Banks 1900

Appendix C, page C7

Records: COLORADO, **Clear Creek Co**, *Chicago Crk*, at Chicago Frks Picnic Ground, 2816 m, 21-VI-1981, A, DERP.

Remarks: This is the only record available for this species in Colorado, and it is based on a single female in poor condition. This specimen is the basis for Herrmann et al.'s (1986) new state record of *G. alascense*. Until additional specimens of this species are verified, this record should be considered questionable, or removed completely from lists of Colorado caddis. This adult collection was made at 2816 m in elevation in June.

Glossosoma parvulum Banks 1904

Appendix C, page C7

Records: COLORADO, **Boulder Co**, *Saint Vrain Crk*, at Hwy 36, 1600 m, 15-VIII-1981, A, INHS; 6.4 km abv Lyons, 1725 m, 17-VI-1975, A; **Clear Creek Co**, *Clear Crk*, bridge at W end of Idaho Springs, 2314 m, 5-VII-1981, A, INHS; **Jefferson Co**, *Bear Crk*, bridge just abv Rosedale, 2248 m, 20-VI-1981, A, L, DERP; 1st bridge in canyon abv Evergreen, 2167 m, 20-VI-1981, A, INHS; *N Frk S Platte R*, at Pine Valley Ranch, 2103 m, 20-VII-1982, A, DERP; *N Frk S*

Platte R, at Riverview, 2009 m, 23-VIII-1981, A, INHS; *S Platte R*, at Kassler bridge, 1682 m, 23-V-1981, A, L, DERP; bridge at inlet to Chatfield Res, 1656 m, 28-VI-1982 m, A, DERP; *Troublesome Crk*, at Kittredge, 2094 m, 5-VII-1981, A, INHS; **Larimer Co**, *Big Thompson R*, CR 22H and CR 29, 1554 m, 20-V-2007, A, CSUC; just abv Lake Estes, 2282 m, 12-VII-1978, A; Hwy 34 nr canyon mouth at WWTP, 1611 m, 16-VII-1997, A, CSUC; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 10-VII-1994, A, CSUC; *Cache la Poudre R*, BLT blw WWTP, Hwy 14, 1640 m, 13-VII-1989, A, CSUC; Hwy 14 9.7 km upstrm of Hwy 287, 1652 m, 15-VII-1996, A, CSUC; Fort Collins Lions Park Overland Trail Rd, 1544 m, 22-V-1987, A, CSUC; 5-VI-1998, A, CSU; at mouth of canyon nr Fort Collins, 1594 m, 13-IX-1995, P, USGSNWQL; Shields St bridge Fort Collins, 1518 m, 5-IX-1996, A, CSUC; Hwy 14 nr Kinikini, 2353 m, 16-VII-1981, A; 6.4 km W of Hwy 287 on Hwy 14, 1618 m, 13-IX-1989, A, CSUC; nr Poudre Park, 1725 m, 16-VII-1981, A; 3.2 km abv Poudre Park, 1761 m, 14-VIII-1976, A; Hwy 14 at Rustic, 2177 m, 28-VII-1995, A; at LaPorte, 1544 m, 29-IX-1971, A; Martinez Park Fort Collins, 1513 m, 2-VI-1998, A, CSUC; *BLT*, Pinyon Pine hillside just E of hwy 287 N of Fort Collins, 1823 m, 23-VIII-1997, A, CSU; **Park Co**, *Mid Frk S Platte R*, at Hwy 24, 2690 m, 7-VII-1981, A; Knight-Imbler SWA Hwy 285, 2802 m, 13-VIII-1996, A, CSUC; 3.2 km abv Antero Res at Hwy 285 bridge, 2803 m, 31-VII-1980, A; *S Platte R*, blw Spinney Mountain Res, 2627 m, 2-VII-1991, A, DERP.

Remarks: This is the most common *Glossosoma* species in Colorado occurring throughout the SPRB streams from just downstream of the foothills to nearly

timberline. Specimens were collected between 1513 m and 2803 m in elevation. Adults were present between June and September.

**Glossosoma velonum* Ross 1938

Appendix C, page C8

Records: COLORADO, **Larimer Co**, *inlet to Horsetooth Res*, SW edge of Horsetooth Res at Inlet Bay, 1707 m, 14-VII-2007, A, CSUC.

Remarks: *Glossosoma velonum* is reported from the SPRB for the first time here. This collection is from where the Colorado-Big Thompson transmountain water diversion (CBT) inputs water from the Western Slope of Colorado into Horsetooth Reservoir. The only other Colorado record is from the Western Slope at the upper end of the CBT near Grand Lake where water is supplied from the Colorado River to augment Horsetooth and other Reservoirs along the Front Range (Herrmann et al. 1986). This record may be an example of a species being transported into the SPRB via large interbasin water transfers. The adult female specimen was collected at 1707 m in elevation in July.

Glossosoma ventrale Banks 1904

Appendix C, page C8

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Magnolia Rd, 1843 m, 3-IV-1982, P, DERP; *Saint Vrain Crk*, at Hwy 36, 1600 m, 15-VIII-1981, A, INHS; *N Saint Vrain Crk*, 2.4 km upstrm from Buttonrock Dam, 1864 m, 31-VII-1998, A, CSUC; **Clear Creek Co**, *Clear Crk*, 1st bridge blw Georgetown Res, 2633 m, 3-VII-1981, A, DERP; **Douglas Co**, *S Platte R*, county line in Cheesman

Canyon, 1989 m, 15-VIII-1985, A, DERP; BLT Deckers Resort, 1950 m, 23-VIII-1988, A, CSUC; **Jefferson Co**, *Bear Crk*, 1st bridge abv Rosedale, 2248 m, 16-VII-1981, A, INHS; *Troublesome Crk*, at Kittredge, 2094 m, 5-VII-1981, A, DERP; 16-VII-1981, A, INHS; **Larimer Co**, *Inlet to Horsetooth Res*, SW edge of Inlet Bay, 1707 m, 16-VI-2007, A, CSUC; **Park Co**, *High Crk Fen*, High Crk Federal Preserve 14.5 km S of Fairplay, 2840 m, 29-VII-2009, A, DERP.

Remarks: *Glossosoma ventrale* was collected throughout the middle reaches of mountains streams throughout the SPRB but never in large numbers.

Specimens were collected between 1600 m and 2633 m in elevation. Adults were present in June and August.

Glossosoma verdonum Ross 1938

Appendix C, page C9

Records: COLORADO, **Boulder Co**, *Mid Saint Vrain Crk*, 2636 m, 17-VII-1993, A, CSUC; *Mitchell Crk*, Picnic Area at Brainard Lake, 3259 m, 29-VI-1986, A, DERP; **Clear Creek Co**, *Clear Crk*, bridge at W end of Idaho Springs, 2314 m, 5-VII-1981, A; at confl with W Frk Clear Crk, 2511 m, 3-VII-1981, P, A, DERP; *Pedee Crk*, at bridge, 2456 m, 20-VI-1981, A, P, DERP; *W Frk Clear Crk*, about 90 m upstrm from Clear Crk confl, 2506 m, 5-V-1980, P, DERP; bridge at Hwy 40 & I-70, 2497 m, 26-XII-1980, A, DERP; **Larimer Co**, *BLT*, at Fern Lake in RMNP, 2487 m, 20-VI-1996, A, CSUC; 3-VII-1997, A, CSUC; *Buckhorn Crk*, 32.2 km upstrm Masonville, 2033 m, 31-V-1986, A, CSUC; *Joe Wright Crk*, Station 5, 2911 m, 8-VII-1977, A; 10-VII-1979, A; Station 3, 2962 m, 14-VII-

1978, A; 23-VIII-1980, A; abv Joe Wright Res, 3021 m, 16-VII-1981, A; *Moraine Park*, MVL RMNP, 2477 m, 17-VI-1991, A, CSUC; *Big Thompson R*, YMCA of the Rockies at Estes Park, 2437 m, 7-VI-2001, A, CSUC; **Park Co**, *4 Mile Crk*, FR 421/CR 18 S of Fairplay, 3304 m, 10-VII-2003, A, CSUC; *Buckskin Crk*, FR 416 W of Alma, 3207 m, 10-VII-2003, A, CSUC.

Remarks: This species is common in SPRB streams from the foothills to nearly timberline. The adult specimen collected in December was likely found dead. Specimens were collected between 2033 m and 3304 m in elevation. Adults were present between May and August.

Protoptila coloma Ross 1941

Appendix C, page C9

Records: COLORADO, **Larimer Co**, *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; nr Poudre Park, 1725 m, 16-VII-1981, A, DERP; *N Poudre Canal*, malaise trap Boggs Home CR 17 & 70, 1640 m, 18-VII-1996, A, CSUC; *Lone Pine Crk*, W of Livermore, 1819 m, 22-VI-1986, A, CSUC.

Remarks: The few records of this species from the SPRB are all from the lower Cache la Poudre foothills area. This is another very small caddisfly and while attracted to lights it can easily be overlooked by collectors. The adult females of this genus have legs that are modified for swimming more than most other species (Deutsch 1985). Adults were present in June and July. Specimens were collected at elevations between 1640 m and 1819 m.

Helicopsychoidea (Snailshell Case Making Caddisflies)

Helicopsyche borealis (Hagen) 1861

Appendix C, page C10

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Canyon mouth in Boulder, 1656 m, 15-IV-1997, L; blw 61st St nr Boulder, 1569 m, 11-VII-2003, L, USGSNWQL; *Dry Crk*, Arapahoe Rd in Boulder, 1581 m, 14-IV-1977, L, UCMC; abv Baseline Rd nr Boulder, 1606 m, 30-VI-2003, L, USGSNWQL; *Left Hand Crk*, 81st St nr Niwot, 1539 m, 23-IX-1993, L, USGSNWQL; *S Boulder Crk*, at Baseline Rd Boulder, 1609 m, 13-IV-1995, L; 29-IX-1993, L; *Saint Vrain Crk*, at confl with Boulder Crk, 1545 m, 1-VIII-1975, A; blw Lyons, 1690 m, 11-IV-1972, L, CSUC; 2-VII-1973, L, CSUC; bridge at Hygiene, 1542 m, 19-VI-1975, A; bridge at Longmont, 1503 m, 28-II-1975, L, UCMC; CR 19 (Hover Rd) 2.9 km N of Hwy 119, 1520 m, 7-IX-1980, L, UCMC; 1.6 km upstrm from Longmont WWTP, 1612 m, 1-IX-1988, L, DERP; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; *S Platte R*, Denver, 1577 m, 8-VII-1994, L, USGSNWQL; **Jefferson Co**, *S Platte R*, at Kassler bridge, 1682 m, 8-VIII-2003, A, DERP; Bowles Ave bridge at Littleton, 1619 m, 7-VIII-2003, A, DERP; **Larimer Co**, *Bear Crk*, blw Estes Rd at Lakewood, 1645 m, 23-VI-2003, L, USGSNWQL; *Big Thompson R*, at Loveland, 1497 m, 16-IX-1993, L, USGSNWQL; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 25-VI-2005, A, CSUC; *Box Elder Crk*, Red Mountain Ranch Open Space 0.8 km N of huge dam, 1919 m, 29-VI-2007, L, CSUC; *Buckhorn Crk*, Masonville, 1609 m, 31-X-1993, L, CSUC; *Cache la Poudre R*, abv Box Elder Crk nr Timnath, 1481 m,

22-IX-1993, P, USGSNWQL; 1.6 km N of jct of Hwy 287 & Hwy 14, 1606 m, 10-VI-1976, L, UCMC; *Lone Pine Crk*, Lone Pine SWA, 2089 m, 16-IX-1986, L, CSUC; W of Livermore, 1819 m, 22-VI-1986, A, CSUC; *N Poudre Canal*, malaise trap at CR 17 & CR 70, 1640 m, 18-VII-1996, A, CSUC; 8-VIII-1996, A, CSUC; *Stonewall Crk*, at Hwy 287, 1811 m, 30-VI-1985, A, DERP; 1-V-1983, L, DERP; **Park Co**, *Warm Spring*, at Warm Spring Ranch, 3107 m, 10-IV-1982, P, DERP.

Remarks: This is one of the most widely distributed caddisflies species in the SPRB. It is extremely tolerant of thermal extremes occurring in warm springs to coldwater mountain streams. It seems to be most abundant in warmer conditions with the highest elevation collections occurring in warm springs. This species may have been historically more common along the upper portion of the Great Plains physiographic province along the Front Range of Colorado. Specimens were collected between 1497 m and 3107 m in elevation. Adults were present between June and August.

**Helicopsyche* new species

Appendix C, page C10

Records: COLORADO, **Larimer Co**, *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 13-VI-2009, A, DERP; 23-VII-2009, A, CSUC.

Remarks: This record represents a species new to science. *Helicopsyche probolata* is the proposed name in the Hamilton description draft paper.

Specimens were collected by BLT from an intermittent stream on a restored

prairie historically used for livestock grazing. Additional surveys are needed to locate more populations of this species in the basin. These adult collections occurred in June and July at 1789 m in elevation.

Hydropsychidae (Net Spinning Caddisflies)

Arctopsyche grandis (Banks) 1900

Appendix C, page C11

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Canyon mouth in Boulder, 1656 m, 3-X-1996, L; at 28th St in Boulder, 1613 m, 1-X-1999, L; Broadway Ave in Boulder, 1630 m, 22-IX-1998, L; *S Boulder Crk*, 1st bridge blw Gross Res, 2082 m, 15-VIII-1981, A, INHS; *N Saint Vrain Crk*, W of Lyons, 1690 m, 3-VII-1992, L, DERP; *Saint Vrain Crk*, Hwy 36 East of Lyons, 1600 m, 22-III-1983, L, DERP; Hwy 66 at Lyons, 1637 m, 23-IV-2005, A, DERP; Nederland, 2512 m, 14-VII-1961, A, UCMC; **Clear Creek Co**, *Clear Crk*, bridge at W end of Idaho Springs, 2314 m, 3-VII-1981, L, DERP; 10-VIII-1985, A, DERP; at Idaho Springs, 2314 m, 5-VIII-1973, A, USNM; *W Frk Clear Crk*, bridge at Hwy 40 & I-70, 2497 m, 26-XII-1980, A, DERP; at 1st bridge upstrm from Clear Crk confl, 2511 m, 10-VIII-1985, A, L, DERP; **Gilpin Co**, *S Boulder Crk*, at Pinecliffe, 2432 m, 15-VIII-1981, A, INHS; **Jefferson Co**, *Bear Crk*, bridge just abv Rosedale, 2248 m, 20-VI-1981, A, DERP; 1st bridge in canyon abv Evergreen, 2167 m, 20-VI-1981, A, DERP; *Buffalo Crk*, FS Picnic Area, 2290 m, 23-VIII-1981, L, DERP; *Clear Crk*, at Golden, 1736 m, 11-VIII-1994, L, USGSNWQL; 23-VIII-1993, L, USGSNWQL; *Troublesome Crk*, at Kittredge, 2094 m, 27-VI-

1981, A, DERP; 20-VI-1981, A, INHS; **Larimer Co**, *Big Thompson R*, BLT Fern Lake Trailhead RMNP, 2488 m, 17-VII-1996, A, DERP; blw Moraine Park nr Estes Park, 2439 m, 17-VII-2002, L, USGSNWQL; 23-VII-1993, A, CSUC; 180 m SE Bear Lake Rd, 2440 m, 1-VIII-1985, L, CSUC; Viestenz-Smith Mountain Park 9.8 km W of Loveland, 1853 m, 25-VI-2005, A, CSUC; *Buckhorn Crk*, nr Pennock Pass, 2526 m, 21-III-1986, A, CSUC; *Cache la Poudre R*, at mouth of Canyon nr Fort Collins, 1594 m, 13-IX-1995, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL; mouth of Canyon nr Fort Collins, 1627 m, 15-IV-1971, L, CSUC; at Rustic, 2177 m, 28-VII-1995, A; at Watson Lake, 1559 m, 10-VIII-1971, L, CSUC; 28-VII-1995, A; nr Kinikinik, 2353 m, 16-VII-1981, A; Endo Valley RMNP, 2642 m, 15-VIII-1990, A, CSUC; *Fall R*, Hwy 34 RMNP, 2587 m, 24-VII-1960, A, USNM; *Glacier Crk*, BLT, 0.8 km SW of Sprague Lake Cmpgrd RMNP, 2607 m, 2-VIII-1988, A, CSUC; *Joe Wright Crk*, Station 4, 2924 m, 9-VIII-1980, A; 23-VIII-1980, A; Station 1, 3057 m, 10-VIII-1980, A; Station 3, 2962 m, 9-VIII-1980, A; 23-VIII-1980, A; *N Frk Big Thompson R*, N Frk Picnic Area 1.6 km SE of Glen Haven, 2178 m, 22-VII-1994, A, CSUC; at Glen Haven, 2189 m, 26-VII-1947, A, USNM; *7 Mile Crk*, about 1 km upstrm from Rustic, 2225 m, 28-VII-1995, A; **Park Co**, *Deer Crk*, 4.8 km E of Bailey at Hwy 285, 2512 m, 24-VI-1976, L, UCM.

Remarks: This is the largest net spinning caddisfly species in Colorado and is widespread in the SPRB, often abundant in the larger, cold rivers. Molecular studies are currently underway to determine if *A. inermis* Banks is a separate species from *A. grandis* (Martin et al. 2000), if they are separate then the above

records include both species. The adult specimen collected in December was likely found dead. Specimens were collected between 1559 m and 3057 m in elevation. Adults were present between March and August.

Cheumatopsyche analis (Banks) 1903

Appendix C, page C11

Records: COLORADO, **Arapahoe Co**, *S Platte R*, at Mineral Rd in Littleton, 1628 m, 28-VIII-1993, A, CSUC; 1.6 km S of Bowles Ave Denver, 1624 m, 9-VIII-1993, A; **Boulder Co**, *Saint Vrain Crk*, bridge at Hygiene, 1542 m, 19-VI-1975, A; at Longmont, 1524 m, 10-V-1936, A, UCMC; **Denver Co**, *Bear Crk*, at Bear Crk Park, 1622 m, 28-VI-1982, A, DERP; *S Platte R*, at Evans Ave in spider web, 1597 m, 1-I-1981, A, DERP; **Douglas Co**, *Jarre Crk*, Hwy 67 S of Sedalia, 1766 m, 18-VII-1994, A, CSUC; *Plum Crk*, nr Sedalia, 1682 m, 17-IX-1993, P, USGSNWQL; **Elbert Co**, *Kiowa Crk*, at Elbert, 2047 m, 26-IV-1986, A, CSUC; **Jefferson Co**, *S Platte R*, at bridge at inlet to Chatfield Res, 1656 m, 28-VI-1982, A, DERP; Marston Res, 1687 m, 19-VIII-2007, A, DERP; **Larimer Co**, CSU Nature Center Fort Collins, 1488 m, 10-IX-1977, A; Fort Collins at Light, 1524 m, 14-IX-1977, A, CSUC; 17-VII-1986, A, DERP; *Cache la Poudre R*, Martinez Park Fort Collins, 1513 m, 10-VII-1990, A, CSUC; 2-VI-1998, A, CSUC; ELC Fort Collins, 1488 m, 29-VIII-2001, A, CSUC; Shields St bridge Fort Collins, 1518 m, 5-IX-1996, A, CSUC; *Fossil Crk*, Fort Collins at light, 1505 m, 9-VIII-1986, A, DERP; Golf Course blw Lemay St in Fort Collins, 1494 m, 10-VII-2000, A, CSUC; *Little Thompson R*, CR 4, 1490 m, 22-V-2001, A, CSUC; *Mail Crk*, BLT in Fort Collins, 1521 m, 18-VIII-1988, A, CSUC; 16-VI-

1988, A, CSUC; College Ave & Harmony Rd in Fort Collins, 1528 m, 1-V-2000, A, CSUC; 5-VI-2000, A, CSUC; *N Poudre Canal #4*, Boggs Home Fort Collins CR 17 & 70, 1640 m, 8-VIII-1996, A, CSUC; malaise trap CR 17 & 70, 1640 m, 19-VII-1996, A, CSUC; *Spring Crk*, Fort Collins, 1662 m, 15-VI-1986, A, CSUC; Rolland Moore Park Fort Collins, 1510 m, 15-V-1987, A, CSUC; Edora Park in Fort Collins, 1500 m, 1-V-2000, A, CSUC; 5-VI-2000, A, CSUC; *Inlet to Horsetooth Res*, SW edge of Horsetooth Res at Inlet Bay, 1707 m, 16-VI-2007, A, CSUC; **Logan Co**, *S Platte R*, Tamarack Ranch SWA, 1137 m, 20-VII-2007, A, CSUC; **Morgan Co**, *Irrigation Ditch*, 0.8 km N of Brush SWA, 1283 m, 2-VI-2007, A, CSUC; *S Platte R*, Brush SWA nr Ovid, 1273 m, 2-VI-2007, A, CSUC; *S Platte R*, Jean K Tool SWA, 1280 m, 2-VI-2007, A, CSUC; **Park Co**, *S Platte R*, approx 6.4 km blw Lake George, 2397 m, 7-VII-1981, A; **Sedgwick Co**, *Settlers Ditch*, at CR1 Bridge, 1109 m, 10-IX-2000, A, CSUC; *S Platte R*, at Julesburg, 1063 m, 22-VI-2007, A, CSUC; Julesburg SWA nr Ovid, 1077 m, 22-VI-2007, A, CSUC; **Weld Co**, *Big Thompson R*, Rd 17, 1512 m, 30-IV-1994, A, CSUC; *BLT*, 1388 m, 8-VIII-1986, A, CSUC; *BLT*, Pawnee National Grassland, 1648 m, 19-VI-1986, A, CSUC; *BLT*, Pawnee National Grassland at jct of CR 69 and CR 96, 1648 m, 31-VIII-2007, A, CSUC; *S Platte R*, Hwy 37 Bridge N of Kersey, 1395 m, 17-VIII-2002, A, CSUC; *Big Thompson R*, RD 17, 1512 m, 30-IV-1994, A, CSUC; *S Platte R*, 3.2 km N of Kersey, 1397 m, 8-VI-2007, A, CSUC; Brower SWA, 1408 m, 2-VI-2007, A, CSUC; *Spring Gulch*, at Sandstone Ranch Park nr Longmont, 1493 m, 3-VII-2003, A, USGSNWQL; *Saint Vrain Crk*, 6 km NW of Platteville on CR 38, 1448 m, 9-VI-2007, A,

CSUC; NEBRASKA, **Keith Co**, *S Platte R*, Ogallala Hwy 61, 1097 m, 12-VI-1994, A, CSUC; **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 23-VI-2007, A, CSUC; 7-VII-2007, A, CSUC; rest area nr Hershey, 893 m, 7-VII-2007, A, CSUC; WYOMING, **Laramie Co**, *Lodgepole Crk*, CR 120, 1829 m, 19-V-2000, A, CSUC.

Remarks: An extremely common and highly tolerant species found throughout the lower foothills and plains portions of the SPRB. Many records of *C. analis* were previously reported under the synonym *C. pettiti* (Banks) (Ross 1944, Gordon 1974, Alexander and Smock 2005). Zuellig et al. (2004) present the life cycle for this species in the Fort Collins area, stating it is often the only caddisfly species larva in many small urban streams. The adult collected in January was found dead in a spider web. Adults were present between April and August. Specimens were collected between 865 m and 2397 m in elevation.

**Cheumatopsyche campyla* Ross 1938

Appendix C, page C12

Records: COLORADO, **Sedgwick Co**, *S Platte R*, at Julesburg, 1064 m, 20-VII-2007, A, CSUC; NEBRASKA, **Morgan Co**, *S Platte R*, Brush SWA nr Ovid, 1273 m, 20-IV-2009, A, CSUC; **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 23-VII-2007, A, CSUC; 7-VIII-2007, A, CSUC; rest area nr Hershey, 893 m, 7-VIII-2007, A, CSUC.

Remarks: These records represent a new species for the SPRB. Adults were present in July and August. Specimens were collected between 865 m to 1064 m in elevation.

Cheumatopsyche gracilis (Banks) 1899

Appendix C, page C12

Records: COLORADO, **Boulder Co**, University of Boulder Campus, 1524 m, 1905?, A, UCMC; Boulder, 1925; **Larimer Co**, at Fort Collins, 1899; *Big Thompson R*, Hwy 34 at canyon mouth nr WWTP, 1548 m, 16-VII-1997, A, CSUC; CR 22H and CR 29, 1554 m, 20-V-2007, A, CSUC; *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; Martinez Park Fort Collins upstrm of College Ave, 1513 m, 10-VII-1990, A, CSUC.

Remarks: This species was originally described from Fort Collins, Colorado (Banks 1899) but has been rarely collected since then in the SPRB. However, the 1989 and 1990 collections listed above consisted of hundred of specimens. Specimens were collected from sites along the transition zone between mountain and plains in Colorado between 1513 m and 1640 m in elevation. Adults were present between May and July.

**Cheumatopsyche lasia* Ross 1938

Appendix C, page C13

Records: NEBRASKA, **Lincoln Co**, *S Platte R*, rest area nr Hershey, 893 m, 7-VIII-2007, A, CSUC; at North Platte nr Hwy 83, 865 m, 28-VI-2003, A, CSUC.

Remarks: This typically Midwestern species (Gordon 1974) was recently collected for the first time from the SPRB in Nebraska. Adults were present from June to August. Specimens were collected between 865 m and 893 m in elevation.

Hydropsyche bronta (Ross) 1938

Appendix C, page C13

Records: COLORADO, **Jefferson Co**, *Big Dry Crk*, blw Hyland Crk at Westminster, 1609 m, 2-VII-2003, L, USGSNWQL; *S Platte R*, at Kassler Bridge, 1682 m, 24-IX-2005, A, DERP; **Larimer Co**, *Big Thompson R*, at Loveland, 1497 m, 16-IX-1993, P, USGSNWQL; *Cache la Poudre R*, Martinez Park Fort Collins just upstrm of College Ave, 1513 m, 10-VII-1990, A, CSUC; 2-VI-1998, A, CSUC; Shields St bridge Fort Collins, 1518 m, 14-IX-1986, A, CSUC; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; *Fossil Crk*, at College Ave at Fort Collins, 1505 m, 8-VII-2003, L, USGSNWQL; *Mail Crk*, Fort Collins, 1521 m, 10-VIII-1989, A, CSUC; nr mouth at Fort Collins, 1493 m, 8-VII-2003, L, USGSNWQL; 27-VI-1988, A, CSUC; *N Poudre Canal #4*, CR 17 & CR 70 malaise trap, 1640 m, 8-VIII-1996, A, CSUC; 19-VII-1996, A, CSUC.

Remarks: This widespread, common eastern North American species was first reported in the SPRB from lower elevation, urbanized areas in the 1980's.

Perhaps this relatively recent western expansion occurred along irrigation ditch networks connecting typical eastern and central fauna. Scheffer (2005) recently reorganized *Ceratopsyche bronta* into the genus *Hydropsyche*. Adults were

present between June and September. Specimens were collected between 1493 m to 1682 m in elevation.

Hydropsyche cockerelli (Banks) 1905

Appendix C, page C14

Records: COLORADO, **Boulder Co**, at Boulder, 1640 m, 1904?, A, UCMC; *Boulder Crk*, at Broadway Ave in Boulder, 1630 m, 30-IX-1997, L; 1-X-1999, L; at Canyon mouth in Boulder, 1656 m, 29-IX-1993, L; 1-X-1999, L; at 55th St in Boulder, 1583 m, 30-IX-1997, L; 1-X-1999, L; at 28th St in Boulder, 1613 m, 22-IX-1998, L; *N Saint Vrain Crk*, blw Buttonrock Dam, 1914 m, 22-VIII-1984, A, CSUC; **Douglas Co**, *Horse Crk*, just blw confl with Trout Crk, 2024 m, 1-VI-1985, A, DERP; *BLT*, at Deckers Resort, 1950 m, 23-VIII-1988, A, CSUC; **Jefferson Co**, *Bear Crk*, at Corwina Park, 2054 m, 29-VIII-1981, A; 4-V-1981, L, P, DERP; *Buffalo Crk*, FS Picnic Area, 2290 m, 23-VIII-1981, L, DERP; *N Frk S Platte R*, Pine Valley Ranch, 2103 m, 20-VII-1982, A, DERP; *S Platte R*, at bridge at inlet to Chatfield Res, 1656 m, 28-VI-1982, L, DERP; **Larimer Co**, *Big Thompson R*, 8 km dwnstrm from Estes Park, 2146 m, 25-VII-1997, A, CSUC; 10-VII-1997, A, CSUC; Hwy 34 at canyon mouth at WWTP, 1611 m, 16-VII-1997, A, CSUC; BLT, *Cache la Poudre R*, blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; 9.7 km abv Hwy 287 at Hwy 14, 1652 m, 15-VII-1996, A, CSUC; at Rustic, 2177 m, 28-VII-1995, A; *Lone Pine Crk* (S slope), BLT, 1908 m, 2-VII-1999, A, CSUC; *7 Mile Crk*, about 1 km upstrm of Rustic, 2225 m, 28-VII-1995, A; **Park Co**, *High Crk*, High Crk Federal Preserve 14.5 km S of Fairplay, 2840 m, 17-VII-1995, A, CSUC; *S Frk S Platte R*, Knight-Imbler SWA

Hwy 285, 2802 m, 13-VIII-1996, A, CSUC; abv Antero Res at Hwy 285, 2803 m, 26-VI-1980, A; *S Platte R*, about 11.3 km blw Elevenmile Res, 2464 m, 7-VII-1981, A; 0.8 km upstrm from Elevenmile Res, 2570 m, 11-IX-1987, A, DERP; immediately blw Elevenmile Res, 2567 m, 7-VII-1981, A; *S Platte R*, 6.4 km blw Lake George, 2464 m, 7-VII-1981, A.

Remarks: Another very widespread caddisfly species rivaling *Helicopsyche borealis* in distribution across the SPRB. Specimens were collected at elevations from 1583 m and 2840 m. Adults were present between June and September.

Hydropsyche incommoda Hagen 1861

Appendix C, page C14

Records: COLORADO, **Morgan Co**, at Wiggins, 1387 m, 3-VIII-1986, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 7-VIII-2007, A, CSUC; 29-VII-1993, L, USGSNWQL.

Remarks: The presence of this species in the SPRB might be a result of western expansion into the plains portion of the basin. *Hydropsyche bidens* Ross and *H. orris* Ross were recently synonymized with *H. incommoda* Hagen (Korecki 2006). Specimens were collected between 865 m and 1387 m in elevation. Adults were present in August.

**Hydropsyche morosa* (Hagen) 1861

Appendix C, page C15

Records: COLORADO, **Larimer Co**, Fort Collins, 1905, (no other data associated with this record); **Weld Co**, *BLT*, Pawnee National Grassland, 1648 m, 19-VI-1986, A, CSUC.

Remarks: The above Fort Collins record is the type specimen of *Hydropsyche bifida* Banks 1905, currently a synonym of *H. morosa* (Hagen) (Scheffer 2005). Scheffer et al. (1986) studied the larvae of the *H. morosa* group. Despite the sampling efforts which have occurred in the SPRB since the type specimen was collected, only a single additional collection is known.

Hydropsyche occidentalis Banks 1900

Appendix C, page C15

Records: COLORADO, **Adams Co**, *Clear Crk*, at Derby USGS Gage York St, 1555 m, 16-IX-1980, A, DERP; nr mouth of Clear Crk, 1585 m, 10-IX-1993, P, USGSNWQL; *Little Dry Crk*, blw Lowell St nr Westminster, 1600 m, 25-VI-2003, L, USGSNWQL; *Sand Crk*, Peoria St at Denver, 1615 m, 27-VIII-1993, L, USGSNWQL; **Boulder Co**, *Boulder Crk*, at 55th St in Boulder, 1583 m, 29-IX-1993, L; 1-X-1999, L; at 28th St in Boulder, 1613 m, 22-IX-1993, L; 14-IV-1998, L; at Canyon mouth in Boulder, 1656 m, L; 1-X-1999, L; 15-IV-1997, L; at Magnolia Rd in Boulder, 1843 m, 3-IV-1982, L, DERP; at Broadway Ave in Boulder, 1630 m, 14-IV-1998, L; blw 61st St nr Boulder, 1569 m, 11-VII-2003, P, USGSNWQL; *Coal Crk*, at the eastern Lafayette City limit, 1551 m, 21-III-

1986, L, DERP; *Left Hand Crk*, 81st St nr Niwot, 1539 m, 23-IX-1993, L, USGSNWQL; abv Pike Rd at Longmont, 1514 m, 7-VII-2003, L, USGSNWQL; *S Boulder Crk*, at Baseline Rd Boulder, 1609 m, 29-IX-1993, L; 30-VI-2003, L, USGSNWQL; *St. Vrain Crk*, 3.2 km S of Longmont on CR 1, 1493 m, 8-VI-2007, A, CSUC; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; *BLT*, Denver, 1602 m, 7-VI-1986, A, CSUC; 7-VI-1986, A, CSUC; *Cherry Crk*, Denver, 1579 m, 18-VII-2002, L, USGSNWQL; 1-VII-2003, L, USGSNWQL; *S Platte R*, Denver, 1577 m, 26-VII-1993, L, USGSNWQL; 9-IX-1998, L, USGSNWQL; **Douglas Co**, *Cherry Crk*, about 100 m blw Old Castlewood Dam Castlewood Canyon State Park, 1938 m, 27-VI-1981, L, DERP; *E Cherry Crk*, 2118 m, 26-IV-1986, L, DERP; *Horse Crk*, just blw confl with Trout Crk, 2024 m, 1-VI-1985, L, DERP; *BLT*, Deckers Resort, 1950 m, 23-VIII-1988, A, CSUC; *Plum Crk*, nr Sedalia, 1682 m, 17-IX-1993, L, USGSNWQL; *S Platte R*, at Kassler Bridge, 1682 m, 19-II-1982, L, DERP; **Jefferson Co**, *Bear Crk*, at Soda Lakes Rd, 1721 m, 24-IV-1982, L, DERP; at Morrison, 1756 m, 16-VII-1981, A, INHS; 3.2 km abv Morrison, 1920 m, 15-VII-1982, A, L, DERP; Corwina Park, 2049 m, 20-VI-1981, P, DERP; *Bear Crk*, at Bear Crk Park, 1622 m, 24-IV-1982, A, L, DERP; blw Estes Rd at Lakewood, 1645 m, 23-VI-2003, L, USGSNWQL; *Big Dry Crk*, blw Hyland Crk at Westminster, 1609 m, 2-VII-2003, P, USGSNWQL; *BLT*, Idledale, 1979 m, 2-VII-1982, A, CSUC; *Chimney Gulch*, 1754 m, 7-VII-1999 m, A, CSUC; *Clear Crk*, blw Kipling St at Wheat Ridge, 1630 m, 21-VII-2003, L, USGSNWQL; *S Platte R*, at bridge at inlet to Chatfield Res, 1656 m, 28-VI-1982, A, L, DERP; S

Turkey Crk, at Willow Crk Rd, 2306 m, 24-IV-1982, L, DERP; *Troublesome Crk*, at Kittredge, 2094 m, 5-VII-1981, A; *Turkey Crk*, nr Aspen Park, 2445 m, 8-VIII-1973, A, USNM; **Larimer Co**, at LaPorte, 1540 m, 23-VII-1980, A, DERP; *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; Hwy 34 at Big Thompson Canyon mouth WWTP, 1611 m, 16-VII-1997, A, CSUC; 16-VII-1997, A, CSUC; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 19-VII-1994, A, CSUC; at Loveland, 1497 m, 16-IX-1993, L, USGSNWQL; gas station light Hwy 34 & Rd 23H, 1548 m, 14-VII-1997, A, CSUC; *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; Martinez Park upstrm of College Ave, 1513 m, 16-VI-1999, A, CSUC; 10-VII-1990, A, CSUC; abv WWTP Hwy 14, 1581 m, 13-VII-1989, A, CSUC; Lions Park Overland Trail Rd Fort Collins, 1544 m, 22-VI-1988, A, CSUC; 9.6 km abv Hwy 287 on Hwy 14, 1652 m, 31-VIII-1996, A, CSUC; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; at Watson Fish Hatchery, 2337 m, 14-VII-1976, A, CSUC; at mouth of canyon nr Fort Collins, 1594 m, 13-IX-1995, L, USGSNWQL; 26-VIII-1993, L, USGSNWQL; abv Box Elder Crk nr Timnath, 1481 m, 22-IX-1993, L, USGSNWQL; *Fossil Crk*, Fort Collins at light, 1505 m, 9-VIII-1986, A, DERP; golf course blw Lemay St in Fort Collins, 1494 m, 10-VII-2000, A, CSUC; *BLT*, Martinez Park Fort Collins, 1513 m, 12-IV-1986, A, CSUC; *BLT*, Fort Collins, 1524 m, 1-VII-1986, A, CSUC; 17-IX-1986, A, CSUC; *Little Thompson R*, at Rd 44 nr Berthoud, 1475 m, 20-IX-1993, L, USGSNWQL; *Mail Crk*, BLT Fort Collins, 1521 m, 27-VI-1988, A, CSUC; 13-VIII-1989, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 17-VIII-1990, A, CSUC; *N*

Poudre Canal #4, Boggs Home CR 17 & 70, 1640 m, 8-VIII-1996, A, CSUC; *malaise trap*, CR 17 & 70, 1640 m, 19-VII-1996, A, CSUC; 8-VIII-1996, A, CSUC; *Spring Crk*, Fort Collins, 1662 m, 15-VI-1986, A, CSUC; *at light*, Fort Collins, 1524 m, 17-VII-1986, A, DERP; Fort Collins, 1524 m, 5-VII-1998, A, CSUC; 11-VI-1986, A, CSUC; *inlet to Horsetooth Res*, SW edge of Inlet Bay, 1707 m, 16-VI-2007, A, CSUC; **Park Co**, *S Frk S Platte R*, about 3.2 km blw Antero Res, 2717 m, 7-VII-1981, A; *S Platte R*, Hwy 24 at Lake George, 2414 m, 7-VII-1974, A; blw Spinney Mountain Res, 2627 m, 2-VII-1991, A, DERP; *Tarryall Crk*, at Spruce Cmpgrd, 2592 m, 17-IV-1982, L, DERP; **Teller Co**, Florissant Fossil Beds, 2591 m, 23-VIII-1977, A; **Sedgwick Co**, *S Platte R*, at Julesburg, 1064 m, 22-VI-2007, A, CSUC; **Weld Co**, *BLT*, at Wiggins, 1388 m, 3-VIII-1986, A, CSUC; *Lonetree Crk*, at Carr, 1734 m, 20-VII-1993, L, USGSNWQL; nr Greeley, 1411 m, 6-VIII-2002, L, USGSNWQL; *BLT*, Pawnee National Grassland, 1648 m, 19-VI-1986, A, CSUC; *S Platte R*, Hwy 37 Bridge N of Kersey, 1395 m, 17-VIII-2002, A, CSUC; 8-VI-2007, A, CSUC; nr Kersey, 1394 m, 13-VIII-1998; 15-VII-2002, L, USGSNWQL; *Saint Vrain Crk*, mouth nr Platteville, 1445 m, 28-VII-1994, L, USGSNWQL; *MVL*, 4.8 km N of Windsor, 1495 m, 28-VIII-1998, A, CSUC.

Remarks: This widespread western North American caddisfly (Korecki 2006) was the most abundant and widely distributed caddisfly in the SPRB. No collection records were available from either the Nebraska or Wyoming portions of the SPRB likely due to limited collecting in those areas. Adults were present

between April and September. Specimens were collected between 1064 m and 2717 m in elevation.

Hydropsyche oslari (Banks) 1905

Appendix C, page C16

Records: COLORADO, **Arapahoe Co**, *S Platte R*, 1.6 km S of Bowles Ave Denver, 1624 m, 9-VIII-1993, L, CSUC; **Boulder Co**, *Boulder Crk*, at 55th St in Boulder, 1583 m, 28-IX-1995, L; 1-X-1999, L; at Broadway Ave in Boulder, 1630 m, 30-IX-1997, L; 1-X-1999, L; at Canyon mouth in Boulder, 1656 m, 1-X-1999, L; 29-IX-1993, L; at Canyon mouth in Boulder, 1656 m, 1-X-1999, L; 29-IX-1993, L; at 28th Street, 1613 m, 13-IV-1995, L; 1-X-1999, L; *Mid Boulder Crk*, Hwy 119 at Barker Res, 2512 m, 6-VIII-1973, A, USNM; *N Saint Vrain Crk*, abv Buttonrock Res, 1914 m, 22-VIII-1984, A, CSUC; *S Boulder Crk*, at Baseline Rd in Boulder, 1609 m, 26-IX-1996, L; 29-IX-1993, L; *S Saint Vrain Crk*, 6.4 km abv Lyons, 1725 m, 23-VII-1976, A; Hwy 7 W of Lyons, 1652 m, 28-VII-1998, A, CSUC; **Douglas Co**, *Horse Crk*, just blw confl with Trout Crk, 2024 m, 1-VI-1985, L, DERP; *Jarre Crk*, Hwy 67 S of Sedalia, 1766 m, 18-VII-1994, A, CSUC; *S Platte R*, at S Platte, 1861 m, 21-VII-1987, A, DERP; *Trout Crk*, CR 67, 2020 m, 17-IV-1982, L, DERP; at Deckers Resort, 1950 m, 23-VIII-1988, A, CSUC; **Jefferson Co**, *Buffalo Crk*, at Forest Service Picnic Area, 2290 m, 23-VIII-1981, L, DERP; *Chimney Gulch*, W of Golden, 1754 m, 7-VII-1999, A, CSUC; *Clear Crk*, at Golden, 1577 m, 23-VIII-1993, P, USGSNWQL; 24-VIII-1993, L, USGSNWQL; *Elk Crk*, at Hwy 285 Shaffers Crossing, 2420 m, 8-VIII-1973, A, USNM; *Guy Gulch*, at Robison Gulch Rd & Golden Gate Rd,

2290 m, 29-V-1982, L, DERP; BLT, Idledale, 1979 m, 2-VII-1982, A, CSUC; *N Turkey Crk*, bridge just W of Hwy 285, 2109 m, 24-V-1982, L, DERP; *Parmalee Gulch*, bridge at Hwy 285, 2057 m, 24-IV-1982, L, DERP; *S Turkey Crk*, bridge just abv confl with N Turkey Crk, 2093 m, 24-IV-1982, L, DERP; at S Turkey Crk Rd & Hwy 285 nr the Rd to Tiny Town, 2067 m, 24-IV-1982, L, DERP; *Troublesome Crk*, bridge at Kittredge, 2094 m, 24-IV-1982, L, DERP; bridge at Hwy 74 upstrm from Kittredge, 2094 m, 24-V-1981, L, DERP; *Weaver Gulch*, at W Bellvue Bridge, 1775 m, 24-IV-1982, L, DERP; **Larimer Co**, *Beaver Meadows*, RMNP, 2709 m, 22-VIII-1997, A, CSUC; *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 19-VII-1994, A, CSUC; at Officer, 1466 m, 15-IX-1993, L, USGSNWQL; blw Moraine Park nr Estes Park, 2439 m, 17-VII-2002, L, USGSNWQL; Hwy 34 2.3 km upstrm from Drake, 1991 m, 25-VI-2003, A, CSUC; *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; at mouth of Poudre Canyon nr Fort Collins, 1594 m, 26-VIII-1993, L, USGSNWQL; near small Crk, 2.4 km S of Stove Prairie Landing, 1892 m, 5-VII-1988, A, CSUC; *BLT*, RMNP at Fern Lake Trailhead, 2487 m, 1-VIII-1996, A, CSUC; BLT, *Spring Crk*, BLT blw Spring Crk Dam Fort Collins, 1591 m, 6-IX-1991, A, CSUC; *malaise trap*, 22 km W of Livermore, 1775 m, -VI-1987, A, CSUC; *N Frk Big Thompson R*, N Frk Picnic Area, 1.6 km SE of Glen Haven, 2178 m, 22-VII-1994, A, CSUC; Twin Owls Picnic Area, RMNP, 2507 m, 28-VIII-1990, A, CSUC; Upper Beaver Meadows Picnic Area, RMNP, 2874 m, 16-VIII-1995, A, CSUC; picnic area nr Glen Haven, 2189 m, 11-VIII-1995, A, CSUC; 26-VIII-1995, A, CSUC; *Hidden Valley Picnic Area*, RMNP,

2927 m, 2-VII-1990, A, CSU; *Rist Canyon*, 4.8 km NW of Bellevue, 1707 m, 30-IV-1989, A, CSUC; 23-VIII-1989, A, CSUC; *BLT*, 15 km NW of Bellvue, 2204m, 30-VIII-1989, A, CSUC; *Spring Crk*, Spring Canyon Dam outflow from Horsetooth Res, 1661 m, 11-IV-1986, L, DERP; *RMNP*, Head Quarters Area, 2343 m, 13-VII-1999, A, CSUC; *BLT*, Lone Pine Crk (S slope), 1908 m, 2-VII-1999, A, CSUC; *BLT*, Pinyon Pine hillside just E of hwy 287, 1823 m, 12-VII-1996, A, CSUC; 30-VIII-1997, A, CSUC; **Teller Co**, *Pikes Peak Research Station*, 12.8 km SW of Florissant, 2682 m, 10-VII-1988, A, CSUC. **Weld Co**, *BLT*, Pawnee National Grassland, 1648 m, 19-VI-1986, A, CSUC.

Remarks: Another widely distributed and common western montane *Hydropsyche* species (Scheffer et al. 1986, Wiggins and Parker 1997). It apparently tolerates warmer waters than most of the *Hydropsyche* species as well as lower water quality but can also be found in less disturbed mid-elevation streams of the SPRB. Specimens were collected between 1466 m and 2927 m in elevation. Adults were present between April and September.

Hydropsyche simulans Ross 1938

Appendix C, page C16

Records: COLORADO, **Larimer Co**, *Box Elder Crk*, Red Mountain Ranch Open Space 0.8 km blw huge dam, 1919 m, 29-VI-2007, A, CSUC; *Little Thompson R*, at Rd 44 nr Berthoud, 1475 m, 20-IX-1993, L, USGSNWQL; *N Poudre Canal #1*, CR 80C/Cherokee Rd 3 km W Hwy 287, 1815 m, 17-VI-1996, A, CSUC; **Logan Co**, *S Platte R*, Atwood SWA, 1220 m, 1-VIII-2007, A,

CSUC; **Morgan Co**, *S Platte R*, at Cooper Bridge nr Balzac, 1261 m, 11-IX-1995, L, USGSNWQL; 27-VII-1993, P, USGSNWQL; Brush SWA, 1273 m, 2-VI-2007, A, CSUC; Jean K Tool SWA, 1280 m, 2-VI-2007, A, CSUC; 20-VI-07, A, CSUC; Boyd SWA, 1323 m, 15-VIII-2007, A, CSUC; **Sedgwick Co**, *Lodgepole Crk*, nr Ovid, 1076 m, 27-IX-1993, L, USGSNWQL; *S Platte R*, at Julesburg, 1064 m, 25-VI-2007, A reared, CSUC; Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; **Washington Co**, *S Platte R*, Messex SWA, 1241 m, 1-VIII-2007, A, CSUC; **Weld Co**, *Big Thompson R*, at Hardman, 1395 m, 17-VIII-2007, A, CSUC; *S Platte R*, nr Kersey, 1394 m, 15-VII-2002, L, USGSNWQL; 2-VIII-1993, P, USGSNWQL; Hwy 37 Bridge N of Kersey, 1395 m, 17-VIII-2002, A, CSUC; nr La Salle, 1408 m, 2-IX-1993, L, USGSNWQL; CDC trap at Greeley, 1414 m, 22-VI-2007, A, CSUC; *Saint Vrain Crk*, 7.2 km NW of Platteville at CR 38, 1448 m, 9-VI-2007, A, CSUC; mouth nr Platteville, 1445 m, 28-VII-1994, L, USGSNWQL; *BLT*, 4.8 km NE of Roggen on CR 375, 1462 m, 19-VIII-2007, A, CSUC; *BLT*, Pawnee National Grassland at jct of CR 69 and CR 96, 1648 m, 31-VIII-2007, A, CSCU; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL; 23-VII-2007, A, CSUC.

Remarks: This may be another example of a species that is currently expanding its range westward across the Great Plains. Korecki (2006) reviewed the *Hydropsyche scalaris* group of Hydropsychidae to which this species belongs. Specimens were collected between 865 m and 1850 m in elevation. Adults were present between June and August.

**Parapsyche almota* Ross 1938

Appendix C, page C17

Records: COLORADO, **Clear Creek Co**, *spring*, along S Frk Clear Crk Guanella Pass Rd approx 0.4 km dwnstrm from Georgetown Res, 2810 m, 2-V-1981, L; **Douglas Co**, *seep*, entering S Platte R from E in Cheesman Canyon, 1981 m, 13-VI-1982, P, DERP.

Remarks: This species is very rare in collections and has only been collected in limited numbers. It occurs in the middle and upper portions of headwater streams (Herrmann et al. 1986, Roemhild 1982). Larval specimens were collected between 1981 m and 2810 m in elevation.

Potamyia flava (Hagen) 1861

Appendix C, page C17

Records: COLORADO, **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 12-IX-1995, P, USGSNWQL; 7-VIII-2007, A, CSUC; rest area nr Hershey, 893 m, 7-VIII-2007, A, CSUC.

Remarks: While this is one of the most widely distributed caddisfly species in North America and the only Nearctic species of the genus, only four records are available from the SPRB at the far eastern portion of the basin on the plains. In the east this species is typical of very large, warm rivers (Wiggins 1996). It is possible that the low flows of the South Platte River limit its

distribution within the SPRB. Adults were present in July and August.
Specimens were collected between 865 m and 1077 m in elevation.

**Smicridea signata* (Banks) 1903

Appendix C, page C18

Records: COLORADO, **Larimer Co**, Fort Collins, 1903, MCZC.

Remarks: The holotype female from Fort Collins, Colorado (Banks 1903) is the only SPRB record for this species. It has not been reported again in over 100 years in the SPRB. This is primarily a tropical species, although there are a few records from the western slope of Colorado (Flint 1974, Herrmann et al. 1986). It is reasonable to suspect that either the original description contains a labeling error, or urban and agricultural development of the Front Range of Colorado quickly eliminated habitat for this species, probably via dewatering of streams or pollution as this species occurs in extremely diverse stream habitats in Central America (Flint 1974).

Hydroptilidae (Micro Caddisflies)

Agraylea multipunctata Curtis 1834

Appendix C, page C18

Records: COLORADO, **Gilpin Co**, *Snowline Lake*, 2746 m, 13-VII-1982, A, DERP; **Jefferson Co**, *N Frk S Platte R*, Pine Valley Ranch, 2103 m, 20-VII-1982, A, DERP; *Marston Res*, 4903 Pinyon Dr at Bow Mar, 1687 m, 19-VIII-2007, A, DERP; **Larimer Co**, *Big Thompson R*, RMNP, 2440 m, 20-XI-1992, P,

CSUC; 180 m SE Bear Lake Rd RMNP, 2440 m, 6-VI-1985, P, CSUC; *Cache la Poudre R*, Martinez Park Fort Collins just upstrm of College Ave, 1513 m, 10-VII-1990, A, CSUC; *College Lake*, nr Horsetooth Res Fort Collins, 1576 m, 30-IV-1990, A, CSUC; *BLT*, blw Spring Crk Dam Fort Collins, 1591 m, 6-IX-1991, A, CSUC; *Fort Collins*, 9-VI-1907; *Mail Crk*, BLT Fort Collins 5100 Greenview Crt, 1521 m, 29-VI-1989, A, CSUC; *BLT*, Fort Collins, 1521 m, 6-VI-1989, A, CSUC; 16-VI-1988, A, CSUC; *Rist Canyon*, 4.8 km NW of Bellevue, 1707 m, 23-VII-1989, A, CSUC; *Shields Pond*, BLT Fort Collins, 1543 m, 5-VII-1991, A, CSUC; *Dixon Res*, nr CSU stadium Fort Collins, 1594 m, 16-IV-1987, A, CSUC; *Inlet to Horsetooth Res*, SW edge of Horsetooth Res at Inlet Bay, 1696 m, 16-VI-2007, A, CSUC; **Park Co**, *Elevenmile Res*, dock at marina, 2520 m, 10-VI-2009, A, CSUC; **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; **Weld Co**, *Bald Eagle Pond*, St Vrain State Park, 1473 m, 28-IV-2009, A, CSUC; Pawnee National Grassland at Long Term Ecological Research Center Pawnee National Grassland Site, 1648 m, 27-VII-1991, A, CSUC.

Remarks: The type locality for *Allotrichia flavida* Banks, a synonym of *A. multipunctata* Curtis, is Fort Collins, Colorado (Banks 1907b). This is the largest micro caddisfly in the SPRB and is common around lakes, ponds, and river backwaters where it feeds on filamentous algae (Nielsen 1948). Adults were present between April and September. Specimens were collected from 1077 m and 2746 m in elevation.

Agraylea saltesea Ross 1938

Appendix C, page C19

Records: COLORADO, **Boulder Co**, *Mid Boulder Crk*, Hwy 119 Barker Res, 2512 m, 6-VIII-1973, A, USNM; **Larimer Co**, *Cache la Poudre R*, at Rustic, 2177 m, 28-VII-1995, A; *BLT*, 1400 W Lake St Fort Collins, 1524 m, 17-VI-1988, A, CSUC; *7 Mile Crk*, about 1 km upstrm from Rustic, 2225 m, 28-VII-1995, A; *S Frk Cache la Poudre R*, Pingree Park Roosevelt NF, 2743 m, 29-VII-1995, A, CSUC.

Remarks: The few records for this species are mostly from higher elevations in the northern portion of the SPRB. Bickle (1979) reviewed the Nearctic Hydroptilidae. Adults were present between June and August. Specimens were collected between 1524 m and 2743 m in elevation.

Hydroptila ajax Ross 1938

Appendix C, page C 19

Records: COLORADO, **Larimer Co**, *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; abv Box Elder Crk nr Timnath, 1481 m, 22-IX-1993, P, USGSNWQL; Hwy 287 Bridge, 1507 m, 12-IX-1987, A, CSUC; *BLT*, Fort Collins 5100 Greenview, 1521 m, 29-VI-1989, A, CSUC; *Mail Crk*, Fort Collins, 1521 m, 29-VIII-1989, A, CSUC; 13-VIII-1989, A, CSUC; *N Poudre Canal*, malaise trap CR 17 & CR 70, 1640 m, 18-VII-1996, A, CSUC; 8-VIII-1996, A, CSUC; **Morgan Co**, *S Platte R*, at Cooper Bridge nr Balzac, 1261 m, 26-VII-1994, P, USGSNWQL; 27-VII-1994, P, USGSNWQL; **Sedgwick Co**,

Lodgepole Crk, nr Ovid, 1076 m, 27-IX-1993, P, USGSNWQL; *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 25-VII-1994, P, USGSNWQL.

Remarks: This species is found from the foothills to the eastern plains portion of the SPRB. Adults were present between June and September. Specimens were collected from 865 m to 1640 m in elevation.

Hydroptila arctia Ross 1938

Appendix C, page C20

Records: COLORADO, **Adams Co**, *Sand Crk*, Peoria St at Denver, 1615 m, 27-VIII-1993, P, USGSNWQL; **Denver Co**, *Cherry Crk*, Denver, 1577 m, 4-VIII-1993, P, USGSNWQL; *S Platte R*, Denver, 1577 m, 26-VII-1993, P, USGSNWQL; **Douglas Co**, *BLT*, Deckers Resort, 1950 m, 23-VIII-1988, A, CSUC; **Jefferson Co**, *S Frk S Platte R*, at Trumbull, 1932 m, 19-X-2001, A, DERP; **Larimer Co**, *Big Thompson R*, at Estes Park, 2441 m, 30-VI-2007, A, DERP; *Cache la Poudre R*, Hwy 287 Bridge, 1507 m, 12-IX-1987, A, CSUC; *Mail Crk*, Fort Collins, 1521 m, 6-VI-1989, A, CSUC; 13-VIII-1989, A, CSUC; *N Poudre Canal*, malaise trap CR 17 & CR 70, 1640 m, 19-VII-1996, A, CSUC; *Rist Canyon*, 3.2 km N of Bellvue, 1654 m, 22-VII-1989, A, CSUC; *Stonewall Crk*, at Hwy 287, 30-VI-1985, A, DERP; **Park Co**, *S Platte R*, 0.8 km upstrm Elevenmile Res, 2570 m, 11-IX-1987, A, DERP.

Remarks: This species is common in many lotic waters in Colorado (Herrmann et al. 1986). Specimens were collected between 1507 m and 2570 m in elevation. Adults were present between July and October.

Hydroptila argosa Ross 1938

Appendix C, page C20

Records: COLORADO, **Larimer Co**, *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; Hwy 287 Bridge, 1507 m, 12-IX-1987, A, CSUC; *N Poudre Canal*, malaise trap Boggs Home CR 17 & CR 70, 1640 m, 18-VII-1996, A, CSUC; 8-VIII-1996, A, CSUC; *Spring Crk*, Spring Canyon Dam outflow from Horsetooth Res, 1661 m, 11-IV-1986, P, DERP.

Remarks: Another common micro caddisfly in Colorado (Herrmann et al. 1986). The only SPRB records for this species are from near Fort Collins, Colorado. Adults were present between July and September. Specimens were collected from 1507 m and 1661 m in elevation.

Hydroptila consimilis Morton 1905

Appendix C, page C21

Records: COLORADO, **Adams Co**, *Sand Crk*, Peoria St at Denver, 1615 m, 27-VIII-1993, P, USGSNWQL; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, P, USGSNWQL; *Cherry Crk*, at Denver, 1577 m, 4-VIII-1993, P, USGSNWQL; *S Platte R*, Denver, 1577 m, 8-VII-1994, P, USGSNWQL; 9-IX-1998, P, USGSNWQL; **Douglas Co**, *Plum Crk*, nr Sedalia, 1682 m, 17-IX-1993, P, USGSNWQL; **Larimer Co**, *Cache la Poudre R*, BLT blw WWTP Hwy

14, 1640 m, 13-VII-1989, A, CSUC; *N Poudre Canal*, malaise trap Boggs Home CR 17 & CR 70, 1640 m, 18-VII-1996, A, CSUC.

Remarks: Most of the *Hydroptila consimilis* records are from the transition zone. It is interesting that the majority of records for this species have been reported from the Denver metropolitan area. Specimens were collected between 1577 m and 1640 m in elevation. Pupae were present in streams until September while adult collections were made only in July.

Hydroptila pecos Ross 1941

Appendix C, page C21

Records: COLORADO, **Boulder Co**, *Dry Crk*, blw Niwot Rd at Niwot, 1542 m, 2-VII-2003, P, USGSNWQL; *Left Hand Crk*, 81st St nr Niwot, 1539 m, 23-IX-1993, P, USGSNWQL; **Denver Co**, *S Platte R*, Denver, 1577 m, 5-IX-1995, P, USGSNWQL; **Jefferson Co**, *S Frk S Platte R*, at Trumbull, 1932 m, 19-X-2001, A, DERP; **Larimer Co**, *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, P, USGSNWQL; *Fossil Crk*, Fort Collins at Light, 1505 m, 9-VIII-1986, A, DERP; *Little Thompson R*, at Rd 44 nr Berthoud, 1475 m, 20-IX-1993, P, USGSNWQL; *Mail Crk*, BLT at Fort Collins, 1521 m, 2-VIII-1988, A, DERP; 13-VIII-1989, A, CSUC; at Fort Collins, 1493 m, 8-VII-2003, A, USGSNWQL; *N Poudre Canal*, malaise trap Boggs Home CR 17 & 70, 1640 m, 18-VII-1996, A, CSUC; **Morgan Co**, *S Platte R*, Jean K Tool SWA, 1280 m, 20-VI-2007, A, CSUC; **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; **Weld Co**, *S Platte R*, nr Kersey, 1394 m, 2-VIII-1993, P,

USGSNWQL; 17-VIII-2002, A, CSUC; at Fort Lupton, 1487 m, 24-IX-1993, P, USGSNWQL; *Saint Vrain Crk*, mouth nr Platteville, 1445 m, 28-VII-1994, P, USGSNWQL; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, P, USGSNWQL.

Remarks: This species was found throughout the northern portion of the SPRB from the foothills east to North Platte, Nebraska. It was also found in irrigation ditches, which may indicate an ability to colonize intermittent habitats. Adults were present between June and October. Specimens were collected between 865 m and 1932 m in elevation.

Hydroptila rono Ross 1941

Appendix C, page C22

Records: COLORADO, **Jefferson Co**, *Mid N Frk S Platte R*, Pine Valley Ranch, 2103 m, 20-VII-1982, L, DERP; **Larimer Co**, *Fall R*, Beaver Pond Picnic Area Hidden Valley RMNP, 2611 m, 28-VIII-1995, A, DERP; **Park Co**, *Mid Frk S Platte R*, at CR 14 bridge nr Fairplay, 3065 m, 30-VII-2009 A, DERP.

Remarks: This species is uncommon in the SPRB and throughout most of its range but apparently larvae can occur in a wide diversity of habitat (Roemhild 1982, Anderson 1976). Adults were present in August. Specimens were collected between 2103 m and 3065 m in elevation.

**Hydroptila waubesiana* Betten 1934

Appendix C, page C22

Records: COLORADO, **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC.

Remarks: This records represents a new species in the SPRB. It is widespread in eastern North America (Blickle 1979, Hamilton et al. 1983). It was collected on the plains portion of the SPRB at 1077 m in elevation in July.

**Hydroptila xera* Ross 1938

Appendix C, page C23

Records: COLORADO, **Douglas Co**, *S Platte R*, at Hwy 24 at Lake George, 2414 m, 7-VIII-1974, A, USNM; **Park Co**, *S Platte R*, dwnstrm from Spinney Mountain Res, 2627 m, 22-VIII-1989, A, DERP; 0.8 km upstrm from Elevenmile Res, 2570 m, 11-IX-1987, A, DERP.

Remarks: This widespread North American species was collected in the southern portion of the SPRB but has not been reported in over 20 years. Specimens were collected from 2414 m to 2627 m in elevation. Adults were present between August and September.

Leucotrichia pictipes (Banks) 1911

Appendix C, page C23

Records: COLORADO, **Boulder Co**, *Saint Vrain Crk*, 1.6 km upstrm from Longmont WWTP, 1612 m, 1-IX-1988, L, DERP; at Longmont at 85th and 9th

Streets, 1530 m, 26-IX-2007, L, DRees; *Boulder Crk*, at Canyon Mouth in Boulder, 1656 m, 25-IX-2007, L, DRees; at 55th St in Boulder, 1584, 25-IX-2007, L, DRees; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; **Douglas Co**, *S Platte R*, at Kassler Bridge, 1682 m, 19-II-1982, L, DERP; 28-VI-1982, A, DERP; **Jefferson Co**, *Bear Crk*, at Corwina Park, 2050 m, 5-VII-1981, A, DERP; 20-VI-1981, A, DERP; 3.2 km abv Morrison, 1920 m, 15-VII-1982, A, DERP; 27-VI-1981, A, L, P, DERP; *S Platte R*, at bridge at inlet to Chatfield Res, 1656 m, 28-VI-1982, A, DERP; **Larimer Co**, *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 27-VI-1990, A, CSUC; *Mail Crk*, Fort Collins, 1521 m, 13-VII-1990, A, CSUC.

Remarks: Larvae of this micro caddisfly apparently can tolerate relatively high nutrient loadings as it was collected from several Front Range urban streams. The unique cases of the last instar larvae can cover the surface of stones (Wiggins 1996). This species appears to be associated with foothills transitional zone streams. Specimens were collected at sites ranging from 1521 m and 2050 m in elevation. Adults were present in June and July.

Ochrotrichia logana (Ross) 1941

Appendix C, page C24

Records: COLORADO, **Boulder Co**, *Mid Boulder Crk*, at Hwy 119 in Nederland, 2512 m, 9-VIII-1981, A, DERP; *N Saint Vrain Crk*, immediately blw Buttonrock Res, 1914 m, 4-IX-1978, A; **Jefferson Co**, *S Platte R*, at bridge at

inlet to Chatfield Res, 1656 m, 28-VI-1982, A, DERP; *Troublesome Crk*, at Kittredge, 2094 m, 5-VII-1981, A, DERP; **Larimer Co**, *N Poudre Canal*, malaise trap Boggs Home CR 17 & 70, 1640 m, 18-VII-1996, A, CSUC; *Stonewall Crk*, at Hwy 287, 1811 m, 30-VI-1985, L, P, DERP.

Remarks: *Ochrotrichia* species occurred in habits similar to those for species of *Hydroptila* (Wiggins 1996). Some of the records herein may indicate that this species can colonize intermittent habitats. Specimens were collected between 1640 m and 2512 m in elevation. Adults were present between June and September.

Ochrotrichia stylata (Ross) 1938

Appendix C, page C24

Records: COLORADO, **Denver Co**, *Bear Crk*, at Bear Crk Park, 1622 m, 28-VI-1982, A, DERP; **Jefferson Co**, *Bear Crk*, at Morrison, 1756 m, 16-VII-1981, A, DERP; *S Platte R*, at Trumbull, 1932 m, 19-X-2001, A, DERP; **Larimer Co**, *Big Thompson R*, at Loveland, 1497 m, 16-IX-1993, P, USGSNWQL; *N Poudre Canal*, malaise trap Boggs Home CR 17 & 70, 1640 m, 18-VII-1996, A, CSUC; 19-VII-1996, A, CSUC; *Cache la Poudre R*, spider web Harmony Rd & I-25 Fort Collins, 1472 m, 28-X-1987, A, CSUC; *Fossil Crk*, Fort Collins at light, 1505 m, 9-VIII-1986, A, DERP; *Mail Crk*, BLT Fort Collins, 1521 m, 29-VIII-1989, A, CSUC; 10-VIII-1989, A, CSUC; *Rist Canyon*, 4.8 km NW Bellvue, 1707 m, 22-VII-1989, A, CSUC; **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC.

Remarks: This species is widespread along the foothills transition zone with one collection on the plains in the eastern portion of the SPRB. This species has the widest distribution of all western North American *Ochrotrichia* species from the Rocky Mountains to the Pacific Ocean (Denning and Blickle 1972). Specimens were collected between 1077 m and 1923 m in elevation. Adults were present from June to October.

**Ochrotrichia susanae* Flint & Herrmann 1976

Appendix C, page C25

Records: COLORADO, **Park Co**, *High Crk*, High Crk Federal Preserve S of Fairplay, 2840 m, 13-VIII-1995, P, CSUC; 29-VII-2009, P, DERP.

Remarks: The type locality for this species is a spring west of Trout Creek Pass in Chaffee County, Colorado, near the SPRB (Flint and Herrmann 1976). The High Creek Federal Preserve population was only the second population known for this species worldwide until a single male specimen was recently collected in Valles Caldera National Preserve in New Mexico (Vieira et al. 2009, Dr. O.S. Flint personal communication). *Ochrotrichia susanae* is currently under emergency petition as an endangered species under the U.S. Endangered Species Act (Mazzacano et al. 2008). Specimens were collected at 2840 m in elevation.

**Orthotrichia aegerfasciella* (Chambers) 1873

Appendix C, page C25

Records: COLORADO, **Larimer Co**, *Mail Crk*, Fort Collins, 1521 m, 13-VIII-1989, A, CSUC; 16-VIII-1988, A, CSUC.

Remarks: Currently, the only known locality for this species in Colorado is Mail Creek in Fort Collins and is highly impacted by urban development. This record represents the westernmost locality known for this widespread eastern North American species (Blickle 1979). The Mail Creek site is 1521 m in elevation. Adults were present in August.

**Orthotrichia cristata* Morton 1905

Appendix C, page C26

Records: COLORADO, **Larimer Co**, *N. Shields Pond*, Fort Collins Shields St, 1543 m, 1-IX-2008, A, DERP.

Remarks: This recent collection of *Orthotrichia cristata* represents a new SPRB and Colorado species state record. This widespread eastern species, previously reported as far west as Texas and Oklahoma (Zuellig et al. 2006), is usually associated with sandy bottom lakes (Blickle 1979). This adult specimen was collected from a pond just north of Fort Collins in September at 1543 m in elevation.

**Oxyethira dualis* Morton 1905

Appendix C, page C26

Records: COLORADO, **Boulder Co**, *Alder Swamp*, just W of Red Rock Lake, 3102 m, 15-VIII-1981, A, DERP.

Remarks: This species was considered uncommon by Ross (1944). Red Rock Lake and the “Alder Swamp” to the west contained a very diverse caddisfly community as several rare species were common at this site (Herrmann et al. 1986). Specimens were collected at 3102 m in elevation. Adults were present in August.

**Oxyethira pallida* (Banks) 1904

Appendix C, page C27

Records: COLORADO, **Larimer Co**, *Mail Crk*, BLT Fort Collins, 1521 m, 29-VIII-1989, A, CSUC; *Shields Pond*, BLT Fort Collins, 1543 m, 5-VII-1991, A.

Remarks: Another rarely collected species in the SPRB from the Mail Creek location in Fort Collins. Adults were present in July and August.

**Oxyethira serrata* Ross 1938

Appendix C, page C27

Records: COLORADO, **Jefferson Co**, *Standley Lake*, near spillway, 1683 m, 11-VI-2009, A, CSUC.

Remarks: This record represents a new species to the SPRB. It was collected along the rip rap shore of Standley Lake reservoir just SW of Denver, Colorado.

Presumably other populations likely occur in the SPRB. as this specimen was collected from a highly urbanized area.

**Stactobiella delira* (Ross) 1938

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Records: COLORADO, **Larimer Co**, *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 27-VI-1990, A, CSUC.

Remarks: Only a single SPRB record is known for this widespread North American species (Wiggins 1996). Specimens were collected at 1627 m in elevation. Adults were present in June.

Lepidostomatidae (Tube Case Making Caddisflies)

Lepidostoma cascadense (Milne) 1936

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Records: COLORADO, **Boulder Co**, *Mid Boulder Crk*, Hwy 119 Barker Res, 2512 m, 6-VIII-1973, A, USNM; 2nd bridge E of Eldora, 2681 m, 24-VII-2004, A, CSUC; bridge at Eldora, 2681 m, 25-VI-2004, A, CSUC; **Clear Creek Co**, *Clear Crk*, at Idaho Springs, 2314 m, 5-VIII-1973, A, USNM; bridge at W end of Idaho Springs, 2314 m, 5-VII-1981, A, DERP; 3-VII-1981, A, USNM; **Gilpin Co**, *S Boulder Crk*, 1st bridge abv Rollinsville, 2584 m, 9-VIII-1981, A, DERP; **Larimer Co**, *Big Thompson R*, nr Windy Gulch RMNP, 2498 m, 10-IX-1993, A, CSUC; *Fern Lake*, BLT RMNP, 2487 m, 1-VIII-1996, A, CSUC; 21-VIII-1996, A, CSUC; *Fall R*, Hwy 34 RMNP, 2587 m, 24-VII-1960, A, USNM; *Lower Hidden*

Valley, Picnic Area RMNP BLT, 2927 m, 7-VIII-1995, A, DERP; 7-VIII-1995, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 13-VII-1993, A, CSUC; *7 Mile Crk*, about 1 km upstrm from Rustic, 2225 m, 28-VII-1995, A; *unknown*, RMNP, 3049 m, 9-VIII-1947, A, ESUW; RMNP in fast streams, 3049 m, 9-VIII-1947, A, ESUW; **Park Co**, *Duck Crk*, nr Grant, 2998 m, 14-VIII-1997, A CSUC.

Remarks: This species was found throughout the SPRB at higher elevation streams between 2225 m and 3049 m. Adults were present from June to September.

**Lepidostoma cinereum* (Banks) 1899

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Records: COLORADO, **Larimer Co**, *S Frk Cache la Poudre R*, along 63E Rd, 2534 m, 6-VIII-1995, A, CSUC.

Remarks: The above was the only known record in the SPRB for this widespread North American species. This adult was collected at 2534 m in elevation in August.

Lepidostoma ormeum Ross 1946

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Records: COLORADO, **Boulder Co**, *Boulder Crk*, at 55th St in Boulder, 1584 m, 29-IX-1993, L; 30-IX-1997, L; at canyon mouth in Boulder, 1656 m, 29-IX-1993, L; 30-IX-1997, L; at 28th St in Boulder, 1614 m, 29-IX-1993, L; 30-IX-1997, L; **Larimer Co**, *Cache la Poudre R*, nr Kinikini, 2353 m, 16-VII-1981, A.

Remarks: *Lepidostoma ormeum* is another uncommonly collected *Lepidostoma* species in the SPRB. Specimens were collected at elevations from 1584 m to 2353 m. The adults were present in July.

Lepidostoma pluviale (Milne) 1936

Appendix C, page C30

Records: COLORADO, **Boulder Co**, *Mid Boulder Crk*, Hwy 119 Barker Res, 2512 m, 6-VIII-1973, A, USNM; *S Saint Vrain Crk*, 6.4 km abv Lyons, 1725 m, 8-VIII-1975, A, CSUC; Hwy 7 W of Lyons, 1652 m, 28-VII-1998, A, UCMC; **Jefferson Co**, *Bear Crk*, 1st bridge abv Rosedale, 2248 m, 16-VII-1981, A, INHS; 16-VII-1981, A, INHS; about 3.2 km abv Morrison, 1920 m, 15-VII-1982, A, P, DERP; at Corwina Park, 2054 m, 5-VII-1981, A, DERP; 27-VI-1981, A, DERP; 1st bridge in canyon abv Evergreen Lake, 2167 m, 16-VII-1981, A, DERP; at Evergreen, 2145 m, 16-VII-1981, A, INHS; *Elk Crk*, at Hwy 285 Shaffers Crossing, 2420 m, 8-VIII-1973, A, USNM; *BLT*, Idledale, 1979 m, 2-VII-1982, A, CSUC; *S Turkey Crk*, at Deer Crk Canyon Rd 11.2 km W of jct of S Frk Deer Crk Rd 24, 2306 m, 1-VI-1976, P, UCMC; *Troublesome Crk*, at Kittredge, 2094 m, 27-VI-1981, A, DERP; 5-VII-1981, A, DERP; **Larimer Co**, *Big Thompson R*, 8 km dwnstrm from Estes Park, 2146 m, 25-VII-1997, A, CSUC; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 19-VII-1994, A, CSUC; Hwy 34 at Drake, 1878 m, 20-VII-1998, A, CSUC; *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; 24-VII-1996, A, CSUC; Picnic Rock 1st parking area in mouth of Poudre Canyon, 1602 m, 14-VII-1976, A; at Rustic, 2177 m, 28-VII-1995, A; 3.2 km abv Poudre Park, 1761

m, 14-VIII-1976, A, USGSNWQL; at mouth of canyon nr Fort Collins, 1594 m, 16-VIII-1994, P, USGSNWQL; Hwy 14 9.6 km upstrm of Hwy 287, 1652 m, 15-VII-1996, A, CSUC; *Moraine Park*, 0.8 km E Fern Lake trailhead RMNP, 2499 m, 23-VII-1993, A, CSUC; *Picnic Area*, Roosevelt NF nr Glen Haven, 2189 m, 11-VIII-1995, A, CSUC; *Rist Canyon*, 4.8 km NW Bellvue, 1707 m, 22-VII-1989, A, CSUC; *7 Mile Crk*, 1 km upstrm from Rustic, 2225 m, 28-VII-1995, A, CSUC; *S Frk Cache la Poudre R*, 63E Rd, 2534 m, 6-VIII-1995, A, CSUC; *RMNP*, Twin Owls Trailhead, 2507 m, 17-VII-1990, A, CSUC; *Young Gulch*, at Ansel Watrous Cmpgrd Hwy 14, 1769 m, 15-II-1986, A, CSUC; *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 12-VII-1990; 10-IX-1994, A, CSUC; **Teller Co**, *Rule Crk*, N of Woodland Park, 2436 m, 4-VIII-1987, A, CSUC.

Remarks: This is a common *Lepidostoma* species in the SPRB occurring from the lower reaches of the basin to the lower mountains. It was collected from small streams and typically has a smooth, slightly curved, sand grain case. Specimens were collected at elevations from 1594 m 2874 m. Adults were present June to September with an odd collection date in February.

Lepidostoma roafi (Milne) 1936

Appendix C, page C30

Records: COLORADO, **Boulder Co**, *CU Science Lodge*, nr Ward, 2896 m, 26-VIII-1954, A, CSUC; **Larimer Co**, *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 27-VIII-1990, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 7-X-1997, A, CSUC; *Hidden Valley*, Picnic Area RMNP, 2611 m, 14-VIII-1990, A,

Malicky; *S Frk Cache la Poudre R*, at Pingree Park, 2743 m, 29-VII-1995, A;
Twin Owls Res, trailhead RMNP, 2507 m, 17-VII-1990, A, CSUC.

Remarks: This species was collected at higher elevations in the northern portion of the SPRB. The larval case is square in cross section and is constructed of small panels cut from leaves and other vegetation (Anderson 1976). Larvae were found in standing water and small springs. Specimens were collected between 2507 m and 2896 m in elevation. Adults were present July to October.

**Lepidostoma stigma* Banks 1907

Appendix C, page C31

Records: COLORADO, **Boulder Co**, Boulder, 9-VIII-?, A, MCZC.

Remarks: The type female for this species was collected at a light in Boulder, Colorado. Banks (1907a) wrote "One female from Colorado (Oslar) and two from Boulder, Colorado on August 9 (year not reported). Cockerell at light" (Weaver 1988). The only information available from the MCZC online collection is "Lectotype – female, Boulder, Colorado August 9 at light, T.D. A. Cockerell, No. 11692." No additional records for this species are known from the SPRB. Additionally, Herrmann et al. (1986) do not list records for *L. stigma* in Colorado or the basin.

Lepidostoma unicolor (Banks) 1911

Appendix C, page C31

Records: COLORADO, **Boulder Co**, *Mid Boulder Crk*, Hwy 119 Barker Res, 2512 m, 6-VIII-1973, A, USNM; **Jefferson Co**, *Troublesome Crk*, at Kittredge, 2094 m, 16-VII-1981, A, DERP; 5-VII-1981, A, DERP; **Larimer Co**, *Buckhorn Crk*, Roosevelt NF, 2011 m, 22-IX-1986, A, CSUC; *Rist Canyon*, 4.3 km NW Bellevue, 1707 m, 19-XI-1991, A, CSUC; *7 Mile Crk*, about 1 km upstrm from Rustic, 2225 m, 28-VII-1995, A, Malicky; *Fern Lake Trailhead*, RMNP, 2487 m, 1-VIII-1996, A, CSUC.

Remarks: This species was collected from the foothills to the lower alpine region of the SPRB from 1707 m to 2512 m in elevation. Adults were present July to November.

Leptoceridae (Longhorned Caddisflies)

**Ceraclea maculata* (Banks) 1899

Appendix C, page C32

Records: COLORADO, **Larimer Co**, *Big Thompson Canyon*, nr Drake, 1890 m, 20-VII-??, A; **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, rest area nr Hershey, 893 m, 7-VIII-2007, A, CSUC.

Remarks: Herrmann et al. (1986) list the historic collection of *Ceraclea maculata* from Big Thompson Canyon with no year reported. Recent collections

are from a much lower elevations than the historic record in the SPRB.

Specimens were collected from 893 m to 1890 m in elevation. Adults were present in July and August.

**Ceraclea tarsipunctata* (Vorhies) 1909

Appendix C, page C32

Records: COLORADO, **Sedgwick Co**, *S Platte R*, Julesburg SWA nr Ovid, 1077 m, 20-VII-2007, A, CSUC.

Remarks: This material represents a new species record in the SPRB for this widespread North American species. With further collecting it will most likely be found in other eastern parts of the basin. Adults were collected at 1077 m in elevation in July.

**Leptocerus americanus* Banks 1899

Appendix C, page C33

Records: COLORADO, **Sedgwick Co**, *South Platte R*, Julesburg SWA nr Ovid, 1077 m, 22-VI-2007, A, DERP; at Julesburg, 1064 m, 22-VI-2007, A, CSUC.

Remarks: This record represents a new state record for Colorado and the SPRB with the previously known western most record from eastern Nebraska (Herrmann et al. 1986). Specimens were collected between 1064 m to 1077 m in elevation. Adults were present in June.

Mystacides interjectus (Banks) 1914

Appendix C, page C33

Records: COLORADO, **Boulder Co**, *ponds*, W of Long Lake trailhead W of Brainard Lake, 3200 m, 31-VII-1998, A, DERP; 29-VII-1994, A, DERP; *Red Rock Lake*, W of Ward, 3097 m, 10-VII-1994, A, P, DERP; 13-VII-1982, A, L, DERP; **Larimer Co**, *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 24-VII-1996, A, CSUC; *Fall R*, Meadow Pond RMNP, 27-VII-1938; *Lost Lake*, CR 103 N of Hwy 14, 2833 m, 14-IX-2002, L, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 27-VI-1990, A, CSUC; *Sheep Lake*, RMNP, 17-VII-1939; **Park Co**, *Mid Frk S Platte R*, at CR 14 bridge nr Fairplay, 3065 m, 30-VII-2009, A, DERP.

Remarks: This Holarctic species occurs in much of northern and central North America (Yamamoto and Wiggins 1964). In the SPRB, larvae inhabited small ponds and lakes from the foothills to the higher elevations of the basin.

Specimens were collected between 1627 m and 3200 m in elevation. Adults were present in June and July.

**Nectopsyche candida* (Hagen) 1861

Appendix C, page C34

Records: NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 25-VII-1994, L, SGSNWQL; 29-VII-1993, L, USGSNWQL.

Remarks: *Nectopsyche* adults are difficult to separate because many characters are based on male wing color patterns which fade when specimens

are preserved in alcohol. Since the majority of the *Nectopsyche* material examined herein was preserved in alcohol, species determinations were mostly based on larval specimens following the keys of Haddock (1977) although adults of most species were probably collected. Larvae in the genus *Nectopsyche* typically inhabit large, slow moving rivers and lakes (Haddock 1977). This species was only collected in the lowest elevations of the SPRB at 865 m in elevation.

Nectopsyche diarina (Ross) 1944

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Records: COLORADO, **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, P, USGSNWQL; *S Platte R*, Denver, 1577 m, 8-VII-1994, L, USGSNWQL; 26-VII-1993, P, USGSNWQL; **Jefferson Co**, *Clear Crk*, blw Kipling St at Wheat Ridge, 1630 m, 21-VII-2003, L, USGSNWQL; **Larimer Co**, *Big Thompson R*, at Officer, 1466 m, 15-IX-1993, P, USGSNWQL; **Logan Co**, *S Platte R*, Tamarack Ranch SWA, 1137 m, 20-VII-2007, L, CSUC; **Morgan Co**, *S Platte R*, at Cooper Bridge nr Balzac, 1261 m, 27-VII-1993, L, USGSNWQL; 11-IX-1995, L, USGSNWQL; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL; 25-VII-1994, L, USGSNWQL.

Remarks: This northern transcontinental species (Haddock 1977) was mostly collected from the larger streams in the plains portion of the SPRB at elevations

from 865 m to 1630 m. As with other *Nectopsyche* species herein, adults were not used for identification.

**Nectopsyche gracilis* (Banks) 1901

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Records: COLORADO, **Larimer Co**, *Fossil Crk*, golf course blw Lemay St in Fort Collins, 1494 m, 10-VII-2000, A, CSUC.

Remarks: Only one record of this typical western species is known from the SPRB. It typically occurs in sandy bottom streams (Haddock 1977). It was collected near a small stream that originated on the plains just east of the foothills near Fort Collins. This collection was made at 1494 m in elevation. Adults were present in July.

**Nectopsyche lahontanensis* Haddock 1977

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Records: COLORADO, **Larimer Co**, *Mail Crk*, BLT in Fort Collins, 1521 m, 3-IX-1988, A, CSUC.

Remarks: Another western North American species only represented in the SPRB by collections made from Mail Creek in Fort Collins, Colorado. Adults were collected in September at 1521 m in elevation.

Nectopsyche stigmatica (Banks) 1914

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Records: COLORADO, **Boulder Co**, *Saint Vrain Crk*, bridge nr Hygiene, 1542 m, 8-IX-1975, A, CSUC; **Larimer Co**, *Box Elder Crk*, Red Mountain Ranch Open Space 0.8 km N of big dam, 1919 m, 29-VI-2007, A, CSUC; *Cache la Poudre R*, at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; *BLT*, blw Spring Crk Dam Fort Collins, 1591 m, 6-IX-1991, A, CSUC; *Lone Pine Crk*, W of Livermore, 1819, m, 22-VI-1986, A, CSUC; **Sedgwick Co**, *S Platte R*, Julesburg SWA near Ovid, 1077 m, 22-VI-2007, A, CSUC; 20-VII-2007, A, CSUC; at Julesburg, 1064 m, 22-VI-2007; 20-VII-2007, A, CSUC; NEBRASKA, **Keith Co**, *S Platte R*, at Paxton, 933 m, 22-VI-2007, A, CSUC; **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 23-VI-2007, A, CSUC.

Remarks: Recently *N. stigmatica* was collected in large numbers from the South Platte River at North Platte, Nebraska but has been collected from other elevations ranging from 865 m to 1919 m. Adults were present June through September.

Oecetis avara (Banks) 1895

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Records: COLORADO, **Boulder Co**, *Boulder Crk*, blw 61st St nr Boulder, 1569 m, 11-VII-2003, L, USGSNWQL; *Saint Vrain Crk*, bridge at Hygiene, 1542 m, 20-VIII-1976; A; **Denver Co**, *Bear Crk*, mouth at Sheridan, 1616 m, 1-IX-1993, L, USGSNWQL; *S Platte R*, at Denver, 1577 m, 5-IX-1995, L, USGSNWQL;

Douglas Co, *S Platte R*, at Deckers at Cheesman, 1950 m, 7-VII-1978, A, CSUC; 10-VII-1978, A; **Jefferson, Co**, *Bear Crk*, blw Estes Rd at Lakewood, 1645 m, 23-VI-2003, L, USGSNWQL; *S Platte R*, at Kassler Bridge, 1682 m, 8-VIII-2003, A, DERP; Bowles Ave bridge at Littleton, 1619 m, 7-VIII-2003, A, DERP; **Larimer Co**, *Big Thompson R*, at Loveland, 1497 m, 16-IX-1993, L, USGSNWQL; *Cache la Poudre R*, Martinez Park Fort Collins just upstrm of College Ave, 1513 m, 10-VII-1990, A, CSUC; Rocky Bench Picnic Rock Area, 1745 m, 28-VIII-1990, A, CSUC; Poudre Canyon, 1627 m, 14-VII-1976, A; abv WWTP Hwy 14, 1581 m, 13-VII-1989, A, CSUC; Fort Collins Lions Park at Overland Trail Rd, 1544 m, 9-IX-1995, A, CSUC; *Mail Crk*, BLT Fort Collins, 1521 m, 22-VIII-1989, A, CSUC; *N Poudre Canal*, CR 17 & 70, 1640 m, 19-VII-1996, A, CSUC; *Stonewall Crk*, E of Cherokee Park Rd and Hwy 287, 1811 m, 26-VIII-1998, A, CSUC; *inlet to Horsetooth Res*, SW edge of Inlet Bay, 1707 m, 16-VI-2007, A, CSUC.

Remarks: This species is typically associated with larger warm rivers (Floyd 1995); but in the SPRB, was only collected from small to mid-sized streams along the foothills transition zone. While adult collections may contain many specimens, larvae are less commonly encountered. Specimens were collected between 1497 m and 1950 m in elevation. Adults were present June to September.

**Oecetis cinerascens* (Hagen) 1861

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Records: COLORADO, **Jefferson Co**, *Marston Res*, 4903 Pinyon Drive at Bow Mar, 1687 m, 19-VIII-2007, A, DERP; NEBRASKA, **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 7-VII-2007, A, CSUC.

Remarks: These records represent a new species in the SPRB. *Oecetis cinerascens* is widespread in eastern and northern North America in both lotic and lentic habitats (Floyd 1995). SPRB specimens were collected between 865 m and 1687 m in elevation. Adults were present in July and August.

Oecetis disjuncta (Banks) 1920

Appendix C, page C37

Records: COLORADO, **Boulder Co**, *Coal Crk*, at Superior, 1668 m, 21-III-1986, L, DERP; *Saint Vrain Crk*, at Hwy 36, 1600 m, 15-VIII-1981, A, INHS; **Douglas Co**, *S Platte R*, at Kassler Bridge, 1682 m, 19-II-1982, L, DERP; 28-VI-1982, A; **Jefferson Co**, *Bear Crk*, at Corwina Park, 2050 m, 20-VI-1981, A, DERP; 29-VIII-1981, L, DERP; about 3.2 km abv Morrison, 1920 m, 15-VII-1982, A, DERP; *Cub Crk*, at Mount Dillon Park, 2192 m, 24-IV-1982, L, DERP; *Deer Crk*, at Grizzly Bear Rd, 1791 m, 15-VIII-1981, A; *BLT*, Idledale, 1979 m, 2-VII-1982, A, CSUC; *S Turkey Crk*, bridge at the jct of Hwy 285 & S Turkey Crk Rd, 2067 m, 24-VI-1976, P, UCMC; at Deer Crk Canyon Rd 11.2 km W of jct of S Frk Deer Crk Rd, 2306 m, 24-VI-1976, L, UCMC; bridge just abv N Turkey Crk confl, 2093 m, 24-IV-1982, L, DERP; Hwy 285 and the Rd to Tiny

Town, 2067 m, 24-IV-1982, L, DERP; nr Aspen Park, 2445 m, 8-VIII-1973, A, USNM, **Larimer Co**, *Big Thompson R*, 8 km dwnstrm from Olympus Dam, 2146 m, 25-VII-1997, A, CSUC; *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; Martinez Park Fort Collins just upstrm of College Ave, 1513 m, 10-VII-1990, A, CSUC; at mouth of Canyon nr Fort Collins, 1594 m, 17-VII-1994, L, USGSNWQL; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; 13-IX-1995, L, USGSNWQL; *Lone Pine Crk*, W of Livermore, 1819 m, 22-VI-1986, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 30-VII-1992, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 12-VI-2009, A, CSUC; *Spring Crk*, Spring Canyon Dam outflow from Horsetooth Res, 1661 m, 11-IV-1986, L, DERP; *Stonewall Crk*, at Hwy 287, 1811 m, 30-VI-1985, A, DERP; 1-V-1983, L, DERP; *Young Gulch*, Hwy 14 nr Ansel Watrous Cmpgrd, 1769 m, 7-VII-1991, L, CSUC; **Park Co**, *High Crk*, High Crk Federal Reserve S of Fairplay, 2840 m, 1-VIII-1995, A; *S Frk S Platte R*, 0.4 km blw Antero Res, 2718 m, 7-VII-1981, A; blw confl with Mid Frk *S Platte R*, 2663 m, 7-VII-1981, A; about 3.2 km blw Antero Res, 2717 m, 7-VII-1981, A; Hwy 24 & Hwy 9, 2711 m, 7-VII-1974, A, USNM; *S Platte R*, 1859 m, 29-VI-1971, A, CSUC.

Remarks: This mainly western North American species is typically reported from lakes and ponds but in the SPRB it seems to prefer cold streams (Roemhild 1982, Herrmann et al. 1986). Specimens were collected between 1508 m and 2840 m in elevation. Adults were present June to August.

Oecetis inconspicua (Walker) 1852

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Records: COLORADO, **Arapahoe Co**, *Cherry Crk Res*, 1707 m, 10-VI-1982, A, DERP; *BLT*, Englewood, 1622 m, 23-VI-1986, A, CSUC; **Boulder Co**, *Boulder*, 1640 m, 10-VI-1944, A, UCMC; *Red Rock Lake*, W of Ward, 3097 m, 10-VII-1994, L, P, DERP; **Denver Co**, *BLT*, Denver, 1559 m, 7-VI-1986, A, CSUC; *S Platte R*, Denver, 1577 m, 9-IX-1998, A, USGSNWQL; **Douglas Co**, *Chatfield Res*, at Light, 1661 m, 21-VII-1987, A, DERP; **Jefferson Co**, *Chatfield Res*, Chatfield Res at swimming beach at Light, 1661 m, 21-VII-1987, A, DERP; *Chimney Gulch*, 3.2 km W Golden, 1859 m, 7-VII-1999, A, CSUC; *Foothills Gulch*, 1754 m, 7-VII-1999, A, DERP; *Marston Res*, 4903 Pinyon Drive Bow Mar, 1687 m, 19-VIII-2007, A, DERP; **Larimer Co**, *Big Thompson R*, at 7 Pines Cmpgrd, 2127 m, 2-IX-1991, A, CSUC; gas station light Hwy 34 & Rd 23H, 1548 m, 14-VII-1997, A, CSUC; *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; *Martinez Park Fort Collins* just upstrm of College Ave, 1513 m, 10-VII-1990, A, CSUC; *Fossil Crk*, Fort Collins at light, 1505 m, 9-VIII-1986, A, DERP; *Horsetooth Res*, Horsetooth Rd Fort Collins, 1662 m, 15-VI-1986, A, CSUC; *BLT*, Fort Collins, 1524 m, 24-VII-1986, A, CSUC; 11-VI-1986, A, CSUC; *Lost Lake*, 2833 m, 29-VII-1995, A, USNM; *Mail Crk*, Fort Collins, 1521 m, 2-VIII-1988, A, CSUC; 13-VIII-1989, A, CSUC; *Rist Canyon*, 4.8 km NW of Bellvue, 1707 m, 23-VIII-1989, A, CSUC; *Shields Pond*, off Shields Rd Fort Collins, 1543 m, 5-VII-1991, A, CSUC; *Spottewood Crk*, Soapstone Prairie Natural Area, 1789 m 18-VI-2009, A, CSUC; *Spring Crk*,

BLT blw Spring Crk Dam, 1591 m, 6-IX-1991, A, CSUC; Fort Collins, 1662 m, 15-VI-1986, A, CSUC; *inlet to Horsetooth Res*, SW edge of Inlet Bay, 1707 m, 16-VI-2007, A, CSUC; **Weld Co**, *BLT*, Pawnee National Grassland, 1648 m, 19-VI-1986, A, CSUC; *S Platte R*, Hwy 37 Bridge N of Kersey, 1395 m, 17-VIII-2002, A, CSUC; MVL, 4.8 km N of Windsor, 1495 m, 28-VIII-1998, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at North Platte, 865 m, 7-VIII-2007, A, CSUC.

Remarks: *Oecetis inconspicua* is one of the most widespread *Oecetis* species in North America, and it is likely that it comprises a species complex of several different phenotypes (Floyd 1995). It occurred throughout the SPRB, generally from the plains to the lower foothills at sites ranging in elevations from 865 to 3097 m. Adults were present from June to September.

**Oecetis ochracea* (Curtis 1825)

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Records: COLORADO, **Denver Co**, 1588 South Clermont in Denver, 1577 m, 20-VIII-1983, A, DERP; **Larimer Co**, at Fort Collins, 1510 m, 5-VIII-1930, A, CSUC.

Remarks: These two records of this rarely collected *Oecetis* species are from highly populated areas. Roemhild (1982) reported this species from warm water lakes in Montana. Specimens were collected between 1510 m and 1577 m in elevation. Adults were present in August.

Triaenodes frontalis (Banks) 1907

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Records: COLORADO, **Douglas Co**, *Jarre Crk*, Hwy 67, 1766 m, 18-VII-1994, A, CSUC; **Larimer Co**, Fort Collins, 1507 m, 20-VI-no year, (Banks 1907); *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 22-VIII-2009, A, CSUC; *unknown stream*, E of Estes Park, 2279 m, 9-VIII-1947, A, ESUW; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 17-VII-1995, A, CSUC; 1-VIII-1995, A; *S Frk S Platte R*, abv Antero Res at Hwy 285 bridge, 2803 m, 31-VII-1980, A; **Teller Co**, *Florissant*, 2484 m, 3-VIII-1987, A, CSUC.

Remarks: The type locality for this species is Fort Collins, Colorado (Banks 1907a). It is interesting that only one recent record was available for this species near Fort Collins, while a similar species, *T. reuteri*, has been collected there more recently (see *T. reuteri* Larimer County records below). Treated here as *Triaenodes*, *T. frontalis* has been transferred in and out of the subgenus *Ylodes* (Milne 1934, Ross 1944, Manuel and Nimmo 1984, Glover 1996, Morse 2008). Specimens were collected between 1766 m and 2840 m in elevation. Adults were present in July and August.

Triaenodes reuteri (MacLachlan) 1880

Appendix C, page C39

Records: COLORADO, **Larimer Co**, *Fort Collins*, 1508 m, 23-VI-1941, A, CSUC; *Cache la Poudre R*, Martinez Park Fort Collins just upstrm of College

Ave, 1513 m, 10-VII-1990, A, CSUC; *inlet to Horsetooth Res*, SW edge of Inlet Bay, 1707 m, 16-VI-2007, A, CSUC; *Mail Crk*, BLT Fort Collins, 1521 m, 4-VI-1988, A, CSUC; *Stonewall Crk*, BLT E of Cherokee Park Rd and Hwy 287, 1811 m, 26-VIII-1998, A, CSUC; **Weld Co**, *BLT*, Pawnee National Grassland, 1602 m, 19-VI-1986, A, CSUC; *BLT*, Pawnee National Grassland at CR 69 and CR 96, 1648 m, 31-VIII-2007, A, CSUC; NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 29-VII-1993, L, USGSNWQL; **Park Co**, *springs and marsh*, High Crk Federal Preserve S of Fairplay, 2840 m, 29-VII-2009, A, DERP.

Remarks: The type locality of *Triaenodes griseus* Banks, a synonym of *T. reuteri*, is Denver, Colorado (Banks 1899). This species occurs from the foothills transition zone to the eastern most portion of the SPRB on the plains. Similar to *T. frontalis*, *T. reuteri* has been transferred in and out of the subgenus *Ylodes* (Milne 1934, Ross 1944, Manuel and Nimmo 1984, Glover 1996, Morse 2008). Specimens were collected between 865 m and 1811 m in elevation. Adults were present from June to August.

Triaenodes tardus Milne 1934

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Records: COLORADO, **Boulder Co**, *Saw Hill Ponds*, in Boulder, 1562 m, 14-V-1994, A, CSUC; **Jefferson Co**, *Marston Res*, 4903 Pinyon Drive Bow Mar, 1687 m, 19-VIII-2007, A, DERP; **Larimer Co**, *Big Thompson R*, at 7 Pines Cmpgrd, 2127 m, 2-IX-1991, A, CSUC; *Cache la Poudre R*, Martinez Park Fort Collins just upstrm of College Ave, 1513 m, 10-VII-1990, A, CSUC; N Shield St

Bridge Fort Collins, 1518 m, 16-IX-1986, A, CSUC; *Horsetooth Res*, Horsetooth
 Rd Fort Collins, 1662 m, 15-VI-1986, A, CSUC; *BLT*, Fort Collins, 1524 m, 18-
 VI-1986, A, CSUC; 1-VII-1986, A, CSUC; *BLT*, Bay Farm, 1545 m, 22-IX-1986,
 A, CSUC; *BLT*, blw Spring Crk Dam at Horsetooth Res, 1591 m, 6-IX-1991, A,
 CSUC; *Mail Crk*, BLT Fort Collins, 1521 m, 2-VIII-1988, A, CSUC; 13-VIII-1989,
 A, CSUC; *Fossil Crk*, Fort Collins at Light, 1505 m, 9-VIII-1986, A, DERP; *BLT*,
 5100 Greenview Court Fort Collins, 1521 m, 17-VI-1998, A, CSUC; *abv Dixon*
Res, W side Fort Collins, 1650 m, 30-VIII-1995, A, CSUC; *Pineridge Open*
Space, Fort Collins, 1650 m, 30-VIII-1995, A, CSUC; **Weld Co**, *Pawnee*
National Grassland, Long Term Ecological Research Pawnee National
 Grassland Site, 1648 m, 27-VII-1991, A, CSUC; 19-VI-1986, A, CSUC; *BLT*,
 Pawnee National Grassland at jct of CR 69 and CR 96, 1648 m, 31-VIII-2007,
 A, CSCU.

Remarks: This widespread North American species occurs in lakes, ponds, and
 perhaps stream margins (Glover 1996) from the prairies to the lower foothills. It
 can be numerous in light trap collections made at fairly long distances from
 water (Glover 1996). In the SPRB, specimens were collected between 1505 m
 and 2127 m in elevation. Adults were present May to September.

Limnephilidae (Northern Case Maker Caddisflies)

Amphicosmoecus canax (Ross) 1947

Appendix C, page C40

Records: COLORADO, **Boulder Co**, *stream*, just W of Red Rock Lake, 3095 m, 10-VII-1994, L, DERP; **Jefferson Co**, *Cub Crk*, 2nd bridge abv Bear Crk confl on main Rd, 2154 m, **Boulder Co**, 24-IV-1982, A, DERP; *N Turkey Crk*, at Hwy 64 just W of jct of Hwy 285, 2110 m, 16-VII-1976, L, UCMC; **Larimer Co**, *Bennett Crk*, 2300 m, 15-X-1995, A, CSUC; *Buckhorn Crk*, 14.4 km NW of Masonville, 1888 m, 27-IV-1989, A, CSUC; 32 km N of Masonville, 2033 m, 2-X-1986, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 7-X-1997, A, CSUC; *Inn Brk*, nr Chasm Lake RMNP, 3391 m, 19-VII-2008, L, CSUC.

Remarks: In the SPRB, this species occurred in small streams and headwater springs in the upper portions of the basin. Few specimens, larvae or adults, were collected at any given location. Specimens were collected between 1888 m and 3391 m in elevation. Adults were present April to October.

Anabolia bimaculata (Walker) 1852

Appendix C, page C41

Records: COLORADO, **Boulder Co**, *Red Rock Lake*, W of Ward on Brainard Lake Rd, 3094 m, 29-VII-1994, A, DERP; **Douglas Co**, *Jarre Crk*, Hwy 67 S of Sedalia, 1766 m, 18-VII-1994, A, CSUC; **Gilpin Co**, *Forest Lakes*, 3309 m, 2-VIII-1991, A, DERP; **Jefferson Co**, *Deer Crk*, at Phillipsburg, 1979 m, 23-VIII-1981, A, DERP; *N Frk S Platte R*, at Riverview, 2009 m, 23-VIII-1981, A, INHS;

S Turkey Crk, at 1st bridge abv Tinytown in spider web, 2092 m, 23-VIII-1981, A; INHS, *Troublesome Crk*, bridge at Hwy 74 upstrm from Kittredge, 2094 m, 24-V-1981, A, DERP; *Turkey Crk*, at S Turkey Crk Rd, 2067 m, 23-VIII-1981, A; **Larimer Co**, *Bear Lake*, NE end RMNP, 2911 m, 27-VIII-1994, A, CSUC; *Cache la Poudre R*, location unknown, 15-X-1977, A, CSUC; *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 16-VIII-1995, A, CSUC; *BLT*, Upper Beaver Meadows RMNP, 2927 m, 15-VII-1997, A, CSUC; *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 19-VII-1994, A, CSUC; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 14-VIII-1994, A, CSUC; *Endo Valley*, RMNP, 2642 m, 30-VIII-1990, A, CSUC; 7-VIII-1995, A, CSUC; *Lost Lake*, 2833 m, 29-VII-1995, A, P, DERP; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 13-VIII-1995, A, CSUC; *springs and marsh*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 29-VII-2009, A, DERP.

Remarks: A northern Holarctic species (Berte and Pritchard 1986) collected in the SPRB from the lower foothills to nearly timberline. It typically occurs in streams, lakes and ponds and apparently is adapted to widely fluctuating temperatures in shallow ponds (Berte and Pritchard 1986). Specimens were collected at elevations from 1766 m and 3309 m. Adults were present May to October.

**Anabolia consocia* (Walker) 1852

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Records: COLORADO, **Weld Co**, *Lonetree Crk*, at Carr, 1734 m, 18-VII-1995, P, USGSNWQL.

Remarks: While this species is only represented in the SPRB by a single plains record, it is considered a widely distributed species in North America (Wiggins 1996). Specimens were collected at 1734 m in elevation. The species determination of the specimens associated with this record was based on pupae; therefore, no adult presence information was available.

**Asynarchus circopa* (Ross & Merkley) 1952

Appendix C, page C42

Records: COLORADO, **Larimer Co**, *Fall Crk*, at Cirque Meadows, 2988 m, 11-IX-2007, A, DERP.

Remarks: This record represents a southward known range extension for this species as the closest known population of *A. circopa* is north central Wyoming (Nature Serve 2008). The collection location is a small stream at the edge of a high elevation cirque meadow and pine forest and may be a glacial remnant. Because this record is based on a single female, more collections are necessary to confirm its occurrence in Colorado and thus declaring this account as a new state record. The collection was made in September at 2988 m in elevation.

Asynarchus nigriculus (Banks) 1908

Appendix C, page C42

Records: COLORADO, **Boulder Co**, *S Frk Mid Boulder Crk*, at Hessie, 3190 m, 14-VIII-1953, A, PMNH; *N Frk Boulder Crk*, blw Green Lakes #3, 3460 m, 14-VIII-1990, A, CSUC; *trib to Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, A, CSUC; *Red Rock Lake*, just W of Red Rock Lake W of Brainard Lake, 3102 m, 31-VII-1998, A, DERP; *unknown*, Niwot Ridge Alpine Zone, 3891 m, 18-VIII-1961, A, UCMC; *Eldora*, at Light, 2652 m, 19-VIII-1953, A, PMNH; CU Science Lodge, 2896 m, 3-VII-1936, A, UCMC; 2-VIII-1936, A, UCMC; **Clear Creek Co**, *Abyss Lake*, Mount Evans Wilderness, 3858 m, 6-IX-1999, A, P, DERP; **Gilpin Co**, *Lump Gulch*, nr Gilpin, 2729 m, 8-VIII-1934, A, UCMC; **Larimer Co**, *Upper Beaver Meadows*, Trailhead RMNP, 2709 m, 22-VIII-1997, A, CSUC; 16-VIII-1995, A, CSUC; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 13-VIII-1998, A, CSUC; 7-VIII-1996, A, CSUC; *nr Cameron Pass*, Hwy 14, 3146 m, 9-VIII-1954, A, ESUW; *Joe Wright Crk*, 3057 m, 10-VIII-1980, A, CSUC; 2962 m, 23-VIII-1980, A, DERP; *Gore Range Overlook*, RMNP, 3654 m, 25-VII-1976, A; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 11-VII-2002, 8-IX-2002, A, CSUC.

Remarks: The type locality for this species is Clear Creek, Colorado (Banks 1908). Larvae are usually cannibalistic just before emergence from temporary ponds before they dry up in late summer (Wissinger et al. 2003, Wissinger et al. 2004). Specimens were collected at elevations from 2487 m to 3891 m.

Adults were present July to September.

Chyranda centralis (Banks) 1900

Appendix C, page C43

Records: COLORADO, **Boulder Co**, *Coon Track Crk*, just upstrm from Caribou Mine, 2999 m, 10-VII-1994, A, DERP; **Clear Creek Co**, *seepage area*, S side of Hwy 103 just east of Squaw Pass Picnic Area, 2984 m, 7-V-1994, L, DERP; **Gilpin Co**, *spring*, along Rollins Pass Rd about 3.2 km uphill from E Portal, 2722 m, 10-VII-1994, L, DERP; **Larimer Co**, *Bear Lake*, RMNP, 2904 m, 4-VIII-1994, A, CSUC; *Upper Beaver Meadows*, Trailhead RMNP, 2709 m, 22-VIII-1997, A, CSUC; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 27-VIII-1994, A, CSUC; *Fall R*, RMNP, 3275 m, 26-VII-1994, A, CSUC; *Hidden Valley*, RMNP, 2833 m, 14-VIII-1990, A, CSUC; *Icy Brk*, abv The Loch RMNP, 3103 m, 2-VIII-1988, A, CSUC; *Picnic Area*, Roosevelt NF nr Glen Haven, 2189 m, 26-VIII-1995, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 7-VIII-1995, A, CSUC; *Spruce Crk*, BLT RMNP, 2957 m, 11-VI-1905, A, CSUC; *S Frk Cache la Poudre R*, 6.5 mi from Pingree Park on Mummy Pass Trail, 3360 m, 25-VIII-2002, A, CSUC; **Park Co**, *Leavenworth Crk*, nr Sidney Mine, 3267 m, 30-VI-1980, L, DERP.

Remarks: The type locality for this species is Clear Creek, Colorado (Banks 1900) and the female was originally described as *Asynarchus pallidus* Banks from South Park, Colorado (Banks 1903). This species was widespread in small, high elevation streams in the SPRB. *Chyranda* larvae are easily separated by a unique flattened leaf/bark case (Wiggins 1963). Specimens

were collected between 2189 m to 3360 m in elevation. Adults were present June to August.

Clistoronia maculata (Banks) 1904

Appendix C, page C43

Records: COLORADO, **Elbert Co**, *W Kiowa Crk*, at the Elbert and El-Paso County line, 2164 m, 26-IV-1986, P, DERP; **Larimer Co**, *BLT*, Rist Canyon 5 km NE of Bellvue, 1707 m, 22-VII-1989, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 1-VII-2009, A, CSUC; 23-VII-2009, A, CSUC; **Park Co**, *Pikes Peak Research Station*, 12.8 km SW of Florissant, 2682 m, 10-VII-1988, A, CSUC; *springs and marsh*, High Crk Federal Preserve S of Fairplay, 2840 m, 29-VII-2009, A, DERP.

Remarks: This large caddisfly is rarely collected even though it appears to be widespread in the SPRB. Specimens were collected at elevations from 1707 m to 2682 m. Adults were present in July.

Dicosmoecus atripes (Hagen) 1875

Appendix C, page C44

Records: COLORADO, **Boulder Co**, *CU Science Lodge*, nr Ward, 2896 m, 17-VIII-1954, A, PMNH; 26-VIII-1954, A, PMNH; at Eldora, 2652 m, 17-VIII-1953, A, PMNH; 19-VIII-1953, A, PMNH; *Wild Basin*, RMNP 3.2 km E Wild Basin Trailhead, 2739 m, 31-VIII-1999, A, CSUC; **Clear Creek Co**, *Leavenworth Crk*, nr Waldorf, 3485 m, 30-VI-1980, L, DERP; *Murray Lake*, 3688 m, 18-IX-1982, L, DERP; *Square Top Lake*, W of Guanella Pass Rd, 3675 m, 20-VI-1996, L,

DERP; **Jefferson Co**, *Clear Crk*, at Golden, 1736 m, 11-VIII-1994, P, USGSNWQL; *Deer Crk*, at Phillipsburg, 1979 m, 23-VIII-1981, A, DERP; **Larimer Co**, *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 3-X-1994, A, CSUC; *Buckhorn Crk*, 21.6 km W of Fort Collins, 2067 m, 17-IX-1986, A, CSUC; N of Masonville, 1552 m, 22-IX-1986, A, CSUC; at Masonville, 1640 m, 3-IX-1934, A, CSUC; 4-IX-1934, A, CSUC; *Endo Valley*, RMNP, 2642 m, 30-VIII-1990, A, CSUC; *Icy Brk*, RMNP abv The Loch, 3103 m, 24-VIII-1988, A, CSUC; blw Timberline Falls RMNP, 3208 m, 5-VII-1988, L, CSUC; *Joe Wright Crk*, 2924 m, 23-VIII-1980, A; 2962 m, 6-IX-1980, A; 23-VIII-1980, A; 3057 m, 24-VIII-1980, A; *Hidden Valley*, Picnic Area RMNP, 2611 m, 14-VIII-1990, A, CSUC.

Remarks: This western North American species is the largest caddisfly in the SPRB. The ballast cases are made of large mineral particles and can be found in streams and occasionally along lake margins (Wiggins and Richardson 1982). Specimens were collected at elevations from 1552 m to 3688 m. Adults were present August to October.

Ecclisomyia conspersa Banks 1907

Appendix C, page C44

Records: COLORADO, **Clear Creek Co**, *lakes*, abv Waldorf, 3623 m, 4-VII-1980, A, DERP; **Larimer Co**, *Icy Brk*, Lock Vale Falls blw Timberline Falls RMNP, 3208 m, 5-VII-1988, A, CSUC; *Joe Wright Crk*, 3042 m, 28-VI-1980, A;

Park Co, *springs*, along S Mosquito Crk upstrm from London Mine, 3438 m, 28-V-1980, A, L, P, DERP.

Remarks: This species is typically found along high elevation small, cold streams (Ross 1950). SPRB specimens were collected between 3042 m to 3623 m in elevation. Adults were present May to July.

Ecclisomyia maculosa Banks 1907

Appendix C, page C45

Records: COLORADO, **Boulder Co**, *at Light*, 11.2 km E of Rollins Pass, 3276 m, 2-IX-1973, A; at Boulder, 31-VII-no year, (Banks 1907a); **Clear Creek Co**, *Hoop Crk*, at stream gage just dwnstrm from Berthoud Pass by US Highway 40, 3461 m, 29-VI-2005, A, L, DERP; *W Frk Clear Crk*, at 1st bridge upstrm from Clear Creek confl, 2560 m, 10-VIII-1985, A, DERP; **Larimer Co**, *Fall R*, Endo Valley Picnic Grounds RMNP, 2637 m, 2-VII-1987, A, CSUC; 7-VIII-1995, A, CSUC; *Icy Brk*, abv The Loch RMNP, 3103 m, 3-VIII-1988, A, CSUC; *Joe Wright Crk*, 2924 m, 8-VII-1980, A; 2962 m, 26-VII-1980, A; 2911 m, 27-VII-1980, A; *Spruce Crk*, BLT RMNP, 2957 m, 29-VII-1989, A, CSUC; **Park Co**, *Geneva Crk*, Cmpgrd NW of Grant, 2682 m, 1-VIII-1995, A, USNM.

Remarks: The type locality for this species is Boulder County, Colorado (Banks 1907a) but no recent records were available from there despite many collections from the area. This species often inhabits the lower surfaces of boulders in fast currents of streams and is considered a lower elevation species (Mecom 1972), but all SPRB records are from higher elevations. Specimens

were collected at elevations from 2560 m to 3461 m. Adults were present June to September.

Glyphopsyche irrorata (Fabricius) 1781

Appendix C, page C45

Records: COLORADO, **Boulder Co**, *Brainard Lake*, 9.6 km W of Ward, 3150 m, 28-IX-1986, A, CSUC; W of Long Lake trailhead, 3259 m, 29-VI-1986, P, DERP; *Lost Lake*, 3.8 km W of Eldora, 2999 m, 29-IX-1977, P, UCMC; *Red Rock Lake*, 8 km W of Ward, 3097 m, 22-VIII-1996, P, DERP; *Wild Basin Trailhead*, RMNP, 2959 m, 4-VI-1999, A, CSUC; **Gilpin Co**, *Manchester Lake*, nr Rollinsville, 2615 m, 30-IX-1990, A, CSUC; **Larimer Co**, *Moraine Park*, RMNP, 3032 m, 13-V-1994, A, CSUC; 15-IV-1994, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 6-IV-1991, A, CSUC; *Twin Owls*, Trailhead RMNP, 2507 m, 21-V-1990, A, CSUC; *Lost Lake*, 2833 m, 29-VII-1995, L, USNM.

Remarks: This species occurred from the foothills to nearly timberline in the SPRB; however, there were no accounts reported from the southern portion of the basin. The larvae typically inhabit temporary pools and the adults can overwinter, surviving on stored protein as an alternative to ovipositing in the fall if conditions are not suitable for egg and larval development (Berte and Pritchard 1983, Danks 2007). Specimens were collected at elevations from 2507 m to 3259 m. Adults were present April to September.

**Grammotaulius lorettae* Denning 1941

Appendix C, page C46

Records: COLORADO, **Larimer Co**, *Lost Lake*, 2833 m, 29-VII-1995, A, USNM.

Remarks: The type series of the species was collected from Cameron Pass, Colorado at 3002 m in elevation (Denning 1941). Roger Blahnik at the University of Minnesota, kindly examined the type collection labels for us, and there is no additional information to determine whether it was collected from the South Platte or North Platte River Basin. The only confirmed record available for the SPRB, listed above, was collected about 9.6 km northeast of Cameron Pass. This species typically occurs in heavily vegetated wetlands and autumnal lakes (Wissinger et al. 2003). This single SPRB adult was collected in July at 2833 m in elevation.

**Hesperophylax consimilis* (Banks) 1900

Appendix C, page C46

Records: COLORADO, **Larimer Co**, *Upper Beaver Meadows*, Picnic Area RMNP, 2709 m, 10-IX-1994, A, CSUC; **Park Co**, South Park, (Banks 1900); **Teller Co**, *Pikes Peak Res*, 12.8 km SW Florissant, 2682 m, 10-VII-1986, A, CSUC.

Remarks: The type locality of this species is South Park, Colorado (Banks 1900). *Hesperophylax consimilis* appears to be restricted to streams and large rivers in the central and southern Rocky Mountains (Parker and Wiggins 1985).

Specimens were collected at elevations from 2682 m to 2709 m. Adults were present July to September.

Hesperophylax designatus (Walker) 1852

Appendix C, page C47

Records: COLORADO, **Clear Creek Co**, *Silver Dollar Lake*, 3635 m, 2-VIII-1985, A, CSUC; **Elbert Co**, *Kiowa Crk*, at Kiowa, 1932 m, 26-IV-1986, A, CSUC; **Gilpin Co**, *Lump Gulch*, 2729 m, 27-VIII-1954, A, UCMC; **Jefferson Co**, *Chimney Gulch*, 1754 m, 7-VIII-1999, A, CSUC; 3.2 km W of Golden, 1859 m, 7-VIII-1990, A, CSUC; 7-VIII-1999, A, CSUC; *S Turkey Crk*, at 1st bridge abv Tinytown, 2103 m, 23-VIII-1981, A, ROME; *Turkey Crk*, at S Turkey Crk Rd, 2073 m, 23-VIII-1981, A, ROME; *Bear Crk*, 1st bridge in canyon abv Evergreen, 2164 m, 20-VI-1981, A, DERP; *Troublesome Crk*, at Kittredge, 2088 m, 20-VI-1981, P, ROME; **Larimer Co**, *Bear Lake*, RMNP, 2904 m, 4-VIII-1994, A, CSUC; *Hewlett Gulch*, Hwy 14 W of Fort Collins in Cache la Poudre Canyon, 1728 m, 21-VI-1987, A, CSUC; 10-VI-1987, A, CSUC; 1750 m, 10-VI-1987, A, CSUC; 21-VI-1987, A, CSUC; *BLT*, Bay Farm, 1545 m, 22-IX-1986, A, CSUC; *Joe Wright Crk*, 2924 m, 10-VIII-1980, A, CSUC; *Head Quarters Area*, RMNP, 2343 m, 13-VII-1999, A, CSUC; *malaise trap*, 22 km W of Livermore, 1780 m, 19-VIII-1987, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 24-XI-1991, A, CSUC; *Redstone Crk*, Redstone Canyon, 1625 m, 18-V-1986, A, CSUC; *Rist Canyon*, 11.2 km NW Bellvue, 1707 m, 18-VII-1991, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 5-VI-2009, A, CSUC; *Spring Brk*, 0.4 km N of N dam nr

Horsetooth Res, 1618 m, 17-VI-1977, A, CSUC; 18-VI-1977, A, CSUC; *Twin Owls*, Picnic Area RMNP, 2507 m, 28-VIII-1990, A, CSUC; 17-VI-1990, A, CSUC; *Trail Ridge Rd*, in RMNP, 3200 m, 7-III-1990, A, CSUC; *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 2-VII-1990, A, CSUC; 22-VIII-1997, A, CSUC; *BLT*, Rist Canyon 5 km NE of Bellvue, 1707 m, 30-IX-1989, A, CSUC; *spring*, Soapstone Prairie Natural Area at spring by ranch house, 1918 m, 15-V-2009, A, CSUC; *unknown small stream*, Glacier View subdivision N of Fort Collins nr Howard Evans home, 2670 m, 2-VIII-1986, A, CSUC; *Young Gulch*, Hwy 14 in Cache la Poudre Canyon, 1981 m, 23-VII-1995, A, CSUC.

Remarks: This is a widespread species from the higher portions of the plains to timberline. Specimens were collected at elevations from 1545 m to 3635 m.

Adults were present March to November.

Hesperophylax magnus Banks 1918

Appendix C, page C47

Records: COLORADO, **Boulder Co**, *Coal Crk*, at Lafayette, 1613 m, 13-X-1995, A, CSUC; **Larimer Co**, *BLT*, Fern Lake Trailhead RMNP, 2487 m, 21-VIII-1996, A, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 21-VI-1987, A, P, CSUC; Shields St Fort Collins, 1518 m, 16-X-1977, A, CSUC; 24-IX-1996, A, CSUC; *Moraine Park*, 0.8 km E of Fern Lake Trailhead RMNP, 2499 m, 23-VII-1989, A, CSUC; *spring*, by ranch house at Soapstone Prairie Natural Area, 1918 m, 8-V-2009, A, CSUC.

Remarks: This species was distributed from the lower foothills to nearly timberline, though it was not reported as often as *H. designatus*. Specimens were collected at elevations from 1518 m to 2499 m. Adults were present June to October.

Hesperophylax occidentalis (Banks) 1908

Appendix C, page C48

Records: COLORADO, **Boulder Co**, *S Boulder Crk*, Lafayette, 1614 m, 3-X-1995, A, CSUC; *wetland*, W of Red Rock Lake W of Brainard Lake, 3098 m, 31-VII-1998, A, DERP; **Clear Creek Co**, *Georgetown Res*, Georgetown, 2572 m, 10-VIII-1985, A, L, P, DERP; *Clear Crk*, at confl with W Clear Crk, 2512 m, 3-VII-1981, P, ROME; **Elbert Co**, *Kiowa Crk*, at Elbert, 2047 m, 16-V-1986, A, CSUC; **Gilpin Co**, Central City, 2615 m, 25-VII-1980, A, CSUC; **Jefferson Co**, *Chimney Gulch*, 3.2 km W Golden, 1829 m, 7-VII-1999, A, CSUC; *Turkey Crk*, Hwy 287, 1685 m, 6-III-1990, A, CSUC; *Deer Crk*, at Phillipsburg, 1975 m, 23-VIII-1981, A, ROME; *Mount Vernon Crk*, bridge at Morrison, 1756 m, 24-V-1981, A, ROME; *Troublesome Crk*, bridge at Hwy 74 upstrm from Kittredge, 2088 m, 24-V-1981, A, ROME; **Larimer Co**, *Bear Lake*, RMNP, 2904 m, 4-VIII-1994, A, CSUC; *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 16-VIII-1995, A, CSUC; 12-VII-1990, A, CSUC; *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 8-VI-1999, A, CSUC; RMNP, 0.8 km W Cow Crk, 2463 m, 29-VII-1994, A, CSUC; *Endo Valley*, RMNP, 2642 m, 30-VIII-1990, A, CSUC; 13-VII-1993, A, CSUC; *BLT*, Redstone Estates 11.2 km W Bellevue, 2055 m, 6-VII-1989, A, CSUC; *BLT*, Fort Collins, 1524 m, 1-X-1986, A, CSUC;

malaise trap, 22 Km W of Livermore, 1775 m, VI-1987, A, CSUC; *Hidden Valley*, Picnic Area RMNP, 2691 m, 2-VII-1990, A, CSUC; *N Frk Big Thompson R*, 1.6 km SE Glen Haven in Roosevelt NF, 2178 m, 22-VII-1994, A, CSUC; *Rist Canyon*, 4.8 km NW Bellevue, 1707 m, 30-VIII-1989, A, CSUC; *Head Quarters Area*, RMNP, 2343 m, 13-VII-1999, A, CSUC; *spring*, Soapstone Prairie Natural Area at spring by ranch house, 1918 m, 15-V-2009, A, CSUC; *Timberline Lake*, 3200 m, 28-VI-1981, P, ROME; *unknown small stream*, Glacier View Subdivision nr Howard E Evans Home, 2670 m, 2-VIII-1986, A, CSUC; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass trail, 3415 m, 13-VIII-2002, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 7-VI-1995, A, CSUC; 18-VIII-1995, L, P, USNM; *just N of Oliver Twist Lake*, 3703 m, 15-VII-1996, A, CSUC; *Burning Bear Cmpgrd*, NW of Grant, 2954 m, 2-VIII-1995, A, L, P, USNM; *spring*, 90 m N of Burning Bear Cmpgrd, 2938 m, 26-XII-1980, A, DERP; 21-V-1980, A, DERP; **Teller Co**, at Florissant, 2484 m, 3-VIII-1907, A, MCZC; 4-VIII-1987, A, SWM.

Remarks: The type locality for this species is Florissant, Colorado (Banks 1908), very near the type locality of *Hesperophylax consimilis*. This is another wide spread *Hesperophylax* species in the SPRB that occurred from the lower foothills to nearly timberline. This species is typically found in permanent ponds and streams (Wissinger et al. 2003), often among moss (Parker and Wiggins 1985). Specimens were collected at elevations from 1524 m to 3703 m. Adults were present March to December.

Homophylax flavipennis Banks 1900

Appendix C, page C48

Records: COLORADO, **Boulder Co**, at Boulder, 1631 m, VIII-1939; *Wild Basin*, 3.2 km E of Wild Basin Trailhead RMNP, 2739 m, 31-VIII-1999, A, CSUC; *CU Science Lodge*, nr Ward, 2896 m, 6-VII-1936, A, UCMC; 31-VII-1939, A, PMNH; **Larimer Co**, *Lake Irene*, Picnic Area RMNP, 3231 m, 24-VIII-1994, A, CSUC; **Park Co**, South Park, 2713 m, A, 23-VII-1899, A, MCZC.

Remarks: The type locality for this species is South Park, Colorado (Banks 1900). This species, rare in collections, typically inhabits cold headwater springs (Roemhild 1982). Specimens were collected at elevations from 1631 m to 3231 m. Adults were present July and August.

**Lenarchus brevipennis* (Banks) 1899

Appendix C, page C49

Records: COLORADO, **Gilpin Co**, *S Boulder Crk*, 2743 m, A, (Dodds and Hisaw 1925); **Larimer Co**, *Joe Wright Creek*, 3036 m, 27-VII-1980, A, DERP.

Remarks: Although the type locality for this species is Colorado (Banks 1899) there are only two available records for the state, both from the upper portion of the SPRB. Specimens were collected from approximately 2743 m to 3036 m in elevation. Adults were present in July.

**Lenarchus fautini* (Denning) 1949

Appendix C, page C49

Records: COLORADO, **Larimer Co**, *bog*, NE of Lost Lake, 2834 m, 29-VII-1995, A, USNM.

Remarks: Another rarely collected species with a single record known from the SPRB. *Lenarchus* larvae inhabit permanent and temporary high elevation lakes and ponds (Wiggins 1996). These specimens were collected at 2834 m in elevation. Adults were present in July.

Limnephilus abbreviatus Banks 1908

Appendix C, page C50

Records: COLORADO, **Boulder Co**, *trib to Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, A, CSUC; *Wild Basin*, 3.2 km E of Wild Basin Trailhead RMNP, 2739 m, 31-VIII-1999, A, CSUC; *at Hessie*, 3190 m, 14-VIII-1953, A, PMNH; *sphagnum bog*, Caribou, 3018 m, 12-VII-1949, A, PMNH; *wetland*, blw lake W of Long Lake trailhead, 3200 m, 22-VIII-1996, A, DERP; *wetland*, W of Red Rock Lake, 3098 m, 31-VII-1998, A; 15-VIII-1981, A, DERP; **Clear Creek Co**, *Echo Lake*, 3231 m, 30-VII-1998, A, DERP; **Gilpin Co**, *sphagnum bog*, at Tolland, 2704 m, 11-VII-1949, A, INHS; **Larimer Co**, *Upper Beaver Meadows*, Trailhead RMNP, 2709 m, 22-VIII-1997, A, CSUC; 16-VIII-1995, A, CSUC; *BLT*, RMNP Fern Lake Trailhead, 2487 m, 21-VIII-1996, A, CSUC; 27-VIII-1994, A, CSUC; *BLT*, Fort Collins, 1524 m, 14-IX-1986, A, CSUC; 4-IX-1986, A, CSUC; *malaise trap*, 22 Km W of Livermore, 1775 m, 19-

VIII-1987, A, CSUC; *Moraine Park*, RMNP, 2477 m, 17-VI-1991, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 7-X-1997, A, CSUC; *Rist Canyon*, 4.8 km NW Bellvue, 2204 m, 30-VIII-1989, A, CSUC; *The Loch*, RMNP, 3103 m, 24-VIII-1988, A, CSUC; 2-VIII-1988, A, CSUC; *Young Gulch*, Hwy 14 Ansel Watrous Cmpgrd, 1769 m, 9-IX-1986, A, CSUC; 15-II-1986, A, CSUC; *BLT*, Twin Owls Picnic Area RMNP, 2507 m, 28-VIII-1990, A, CSUC; *MVL*, 2.1 km N of Estes Park, 2507 m, 28-VIII-1991, A, CSUC; *Lake Irene*, Picnic Area RMNP, 3231 m, 24-VIII-1994, A, CSUC; *MVL*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 30-IX-1996, A, CSUC; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 3-VIII-2002, A, CSUC; 22-IX-2002, A, CSUC; Pingree Park, 2743 m, 20-VIII-1925, A, INHS; 15-VIII-1934, A, CSUC; 5.6 km WNW from Box Prairie, 2520 m, 11-IX-2007, A, CSUC; *Lone Pine Crk*, 200 m upstrm from Parking Area, 2089 m, 16-IX-1986, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Reserve S of Fairplay, 2840 m, 18-VIII-1995, A, USNM; 2-VIII-1938, A, CSUC; *spring*, 90 m N of Burning Bear Cmpgrd, 2938 m, 26-XII-1980, A, DERP; *spring*, next to Guanella Pass Rd about 45 m N of Burning Bear Cmpgrd, 2938 m, 21-V-1980, A, DERP.

Remarks: A widespread species from the lower foothills to the highest portions of the SPRB. Ruiter (1995) reviewed and provided records for the North American species of *Limnephilus*. Species of this genus predominantly occur along margins of lakes and ponds but a few species have been found in streams (Wiggins 1996). Specimens were collected at elevations from 1524 m

to 3360 m. Adults were present May to December with an adult reported from February.

**Limnephilus acnestus* Ross 1938

Appendix C, page C50

Records: COLORADO, **Arapahoe Co**, Daimler-Chrysler Mopar at 6400 S Fiddlers Green Circle in Aurora, 1658 m, 12-IX-2007, A, DERP.

Remarks: Interestingly, this was the only available record for this species in the SPRB and east of the Continental Divide as it has been reported in Colorado only from Western Slope (Herrmann et al. 1986). Additional collections are needed to confirm viable populations in the basin. Specimens were collected only in the Denver metropolitan area at 1658 m in elevation. Adults were present in September.

Limnephilus apache Flint 1965

Appendix C, page C51

Records: COLORADO, **Arapahoe Co**, *Roxborough State Park*, 1845 m, VI-1993, A, CSUC; **Boulder Co**, Boulder, 1640 m, 9-VI-1963, A, UCMC; **Larimer Co**, *BLT*, Rist Canyon 11.2 km NW of Bellvue, 2204 m, 19-IX-1991, A, CSUC; *malaise trap*, 22 km W of Livermore, 1775 m, 19-VIII-1987, A, CSUC; *small stream*, Fort Collins at Glacier View Subdivision nr Howard E Evans Home, 2670 m, 2-VIII-1986, A, CSUC.

Remarks: This species occurred in small streams from the upper plains to the lower foothills of the SPRB. Specimens were collected at elevations from 1640 m to 2670 m. Adults were present June to September.

Limnephilus castor Ross & Merkley 1952

Appendix C, page C51

Records: COLORADO, **Larimer Co**, *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 16-VIII-1995, A, CSUC; 27-VIII-1990, A, CSUC; *Hallowell Park*, RMNP, 2563 m, 6-VI-1994, A, CSUC; *malaise trap*, 22 km W of Livermore, 1775 m, 19-VIII-1987, A, CSUC; VI-1987, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 23-VII-2009, A, CSUC; 22-VIII-2009, A, CSUC; **Teller Co**, *Pikes Peak Research Station*, 12.8 km SW of Florissant, 2682 m, 10-VII-1988, A, CSUC.

Remarks: This species is uncommonly collected in the SPRB and appears to be restricted to the Southern Rocky Mountains (Ruiter 1995). Specimens were collected at elevations from 1775 m to 2874 m. Adults were present June to August.

Limnephilus coloradensis (Banks) 1899

Appendix C, page C52

Records: COLORADO, **Boulder Co**, *Red Rock Lake*, 3096 m, 7-VIII-1984, A, CSUC; *trib to Jasper Crk*, Indian Peaks Wilderness Area, 3056 m, 12-VIII-1998, A, CSUC; *CU Science Lodge*, nr Ward, 2896 m, 31-VII-1939, A, INHS; *wetland*, W of Red Rock Lake W of Brainard Lake, 3098 m, 15-VIII-1981, A, DERP; 8-

VIII-2003, A, DERP; **Larimer Co**, *Brainard Lake*, Red Feathers Lakes Rd, 3150 m, 13-IX-1986, A, CSUC; *Icy Brk*, abv The Loch RMNP, 3103 m, 24- VIII-1988, A, CSUC; *Lawn Lake*, RMNP, 3349 m, 15-VII-2001, A, CSUC; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3415 m, 15-VII-2001; 22-IX-2002, A, CSUC; nr Cameron Pass, 3146 m, 18-VIII-1940, A, INHS; *Pingree Park*, 2743 m, 19-VIII-1935, A, INHS; 1-VIII-1925, A, SEMC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 1-VIII-1995, A, USNM; 18-VIII-1995, A, USNM; *Fairplay*, 3034 m, 2-VIII-1938, A, CSUC; *Geneva Park*, at Grant, 2615 m, 9-VIII-1973, A, USNM.

Remarks: The type locality for this species is Fort Collins, Colorado (Banks 1899). No additional records from Fort Collins or at this elevation were available, making the Fort Collins type locality possibly incorrect (Herrmann et al. 1986). Larvae usually occur in marshes or willow carrs. Specimens were collected at elevations from 2615 m to 3415 m. Adults were present July to September.

**Limnephilus dispar* MacLachlan 1875

Appendix C, page C52

Records: COLORADO, **Boulder Co**, *wetland*, just W of Red Rock Lake, 3098 m, 13-VII-1982, A, DERP; 8-VIII-2003, A, DERP.

Remarks: This species was previously reported from Colorado as *L. minusculus* (Banks) (1907b). The only records from the SPRB were from a willow carr just west of Red Rock Lake. However, Nimmo (1971) associated

this species with high velocity streams which is unusual for North American species of *Limnephilus* (Ruiter 1995). Specimens were collected at 3098 m in elevation. Adults were present July to August.

Limnephilus diversus (Banks) 1903

Appendix C, page C53

Records: COLORADO, **Adams Co**, *suction trap*, Brighton, 1528 m, 30-VI-1988, A, CSUC; *unknown*, Brighton, 1528 m, 27-V-1987, A, CSUC; **Jefferson Co**, *Rocky Flats*, 1775 m, 24-VIII-1995, A, CSUC; *Lakewood*, near Bear Crk, 1642 m, 15-VI-1998, A; **Larimer Co**, *Fort Collins*, SW corner of City Park, 1609 m, 20-VI-1991, A, DERP; *Wild Basin*, 3.2 km E of Wild Basin Trailhead RMNP, 2739 m, 31-VIII-1999, A, CSUC; *Hidden Valley*, RMNP, 2833 m, 2-VII-1990, A, CSUC; 13-X-1991, A, CSUC; *BLT*, Fort Collins, 1524 m, 22-VI-1987, A, CSUC; 22-V-1987, A, CSUC; *BLT*, Cranshaw home Fort Collins, 1524 m, 11-IX-1987, A, CSUC; *Mail Crk*, Fort Collins, 1521 m, 29-VIII-?, A, CSUC; 13-VII-1990, A, CSUC; 6-VI-1989, A, CSUC; 26-VIII-1989, A, CSUC; *N Poudre Canal # 4*, Boggs Home CR 17 & 70, 1640 m, 8-VIII-1996, A, CSUC; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 25-VIII-2002, A, CSUC; 29-VII-2002, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 23-VII-2009, A, CSUC; 22-VIII-2009, A, CSUC; **Logan Co**, *suction trap*, Fleming, 1280 m, 5-V-1989, A, CSUC; 12-V-1988, A, CSUC; **Weld Co**, *BLT*, nr Greeley, 1414 m, 22-IX-1986, A, CSUC; *BLT*, Kersey, 1407 m, 18-IX-1986, A, CSUC; *suction trap*, Briggsdale, 1483 m, 19-V-1987, A, CSUC; 1-IX-1989, A, CSUC; *MVL*, 4.8 km N of Windsor, 1495 m, 28-VIII-1998,

A, CSUC; *Pawnee National Grassland*, 1648 m, 19-VI-1986, A, DERP; *Central Plains Experiment Range*, 8 km N of Nunn, 1622 m, 9-IX-1976, A, ESUW.

Remarks: This species occurs in springs and small streams throughout the upper foothills to ponds far out onto the plains of the SPRB. Based on these records, there appears to be two emergence periods, spring and late summer. Specimens were collected at elevations from 1280 m to 3360 m. Adults were present May to October.

Limnephilus externus (Hagen) 1861

Appendix C, page C53

Records: COLORADO, **Boulder Co**, *trib to Jasper Crk*, Indian Peaks

Wilderness, 2975 m, 12-IX-1998, A, CSUC; *Red Rock Lake*, Brainard Lake Rd, 3097 m, 19-IX-1988, A, CSUC; 28-IX-1986, A, CSUC; *Wild Basin*, 3.2 km E of Wild Basin Trailhead RMNP, 2739 m, 31-VIII-1999, A, CSUC; **Jefferson Co**, *Elk Crk*, hwy 285 at Shaffers Crossing, 2423 m, 8-VIII-1973, A, USNM; **Larimer Co**, *Bear Lake*, RMNP, 2904 m, 4-VIII-1994, A, CSUC; 27-VIII-1994, A, CSUC; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 27-VIII-1994, A, CSUC; 4-IX-1994, A, CSUC; *Endo Valley*, RMNP, 2642 m, 30-VIII-1990, A, CSUC; 7-X-1997, A, CSUC; *Lost Lake*, CR 103, 2833 m, 21-IX-1988, A, CSUC; *Rist Canyon*, Gate's Pond, 2206 m, 21-X-1988, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 13-VIII-1995, A, CSUC; 17-IX-1995, A, CSUC; *South Park*, 2713 m, 25-VII-1899, (Banks 1907a); **Teller Co**,

Florissant Fossil Beds, 2591 m, 23-VIII-1977, A; 24-VIII-1977, A; 24-IX-1976, A.

Remarks: The type of *L. oslari* (Hagen), a synonym of *L. externus*, was described from South Park, Colorado (Banks 1907a). The larvae of this species develop in temporary lakes and ponds (Berte and Pritchard 1986) throughout the upper portions of the SPRB. Specimens were collected at elevations from 2206 m to 3097 m. Adults were present from August to October.

Limnephilus frijole Ross 1944

Appendix C, page C54

Records: COLORADO, **Larimer Co**, *BLT*, Fort Collins, 1524 m, 14-IX-1986, A, CSUC; 1-X-1986, A, CSUC; *BLT*, Cranshaw Home Fort Collins, 1524 m, 11-IX-1987, A, CSUC; *BLT*, pinyon pine hillside just E of hwy 287, 1823 m, 11-VIII-1998, A, CSUC; *Box Elder Crk*, Red Mountain Ranch Open Space 0.8 km N of huge dam, 1919 m, 29-VI-2007, L, CSUC; *Mail Crk*, BLT Fort Collins, 1521 m, 14-X-1988, A, CSUC; 14-VI-1989, A, CSUC; *Rist Canyon*, 4.8 km NW Bellvue, 1707 m, 23-VIII-1989, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 5-VI-2009, A, CSUC; 22-VIII-2009, A, CSUC; *Stonewall Crk*, E of Cherokee Park Rd and hwy 287, 1811 m, 26-VIII-1998, A, CSUC;.

Remarks: This species occurs in springs and small streams in the upper plains and lower foothills portion of the SPRB. This species was collected between 1521 m to 1919 m in elevation. Adults were present June through October.

Limnephilus hyalinus (Hagen) 1861

Appendix C, page C54

Records: COLORADO, **Boulder Co**, *Red Rock Lake*, nr Brainard Lake Rd, 3097 m, 19-IX-1998, A, CSUC; **Larimer Co**, *overflow ponds*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 1-IX-1999, A, CSUC; *Pingree Park*, 2743 m, 14-VIII-1934, A, USNM; **Park Co**, *Sheep Crk*, oxbow of Sheep Crk nr Hartsel, 2713 m, 5-VIII-1943, A, INHS; *springs and marsh*, High Crk Federal Preserve S of Fairplay, 2840 m, 29-VII-2009, A, DERP.

Remarks: This species, while uncommonly collected, has a wide distribution in the SPRB from the lower foothills to nearly timberline. Specimens were collected at elevations from 1544 m to 3097 m. Adults were present in August and September.

Limnephilus indivisus Walker 1852

Appendix C, page C55

Records: COLORADO, **Boulder Co**, *Wild Basin*, 3.2 km E of Wild Basin Trailhead RMNP, 2739 m, 31-VIII-1999, A, CSUC; **Larimer Co**, *BLT*, Fern Lake Trailhead RMNP, 2487 m, 4-IX-1994, A, CSUC; 13-VIII-1998, A, CSUC; *Endo Valley*, RMNP, 2642 m, 30-VIII-1990, A, CSUC; 13-VII-1993, A, CSUC; *Pingree Park*, 2743 m, 20-VIII-1923, A, INHS; 14-VIII-1934, A, INHS; *Lost Lake*, 2833 m, 29-VII-1995, L, P, USNM.

Remarks: This species occurred in the upper portions of the SPRB, inhabiting streams or associated wetlands. Specimens were collected at elevations from 2487 m to 2833 m. Adults were present August to September.

Limnephilus janus Ross 1938

Appendix C, page C55

Records: COLORADO, **Boulder Co**, *pond*, just W of Long Lake Trailhead Parking area W of Ward on Brainard Lake Rd, 3200 m, 29-VII-1994, A, L, P, DERP; 31-VII-1998, A, DERP; *Red Rock Lake*, 8 km W of Ward, 3097 m, 15-VIII-1981, A, L, P, DERP; 9-VIII-1981, P, DERP; *Wood Lake*, 3345 m, A, 26-VII-1939, INHS; **Gilpin Co**, Tolland, 2705 m, (Banks 1924); **Larimer Co**, *Endo Valley*, Picnic Area RMNP, 2642 m, 13-VII-1993, A, CSUC.

Remarks: The type specimen of *Colpotaulius minusculus*, as synonym of *L. janus*, was originally described from Tolland, Colorado (Banks 1924). This species is widely distributed but rarely collected. Specimens were found at elevations from 2642 m to 3345 m. Adults were present in July and August.

**Limnephilus labus* Ross 1941

Appendix C, page C56

Records: COLORADO, **Boulder Co**, *Wood Lake*, at Boulder, 3345 m, 26-VII-1941, A, INHS; *Bald Mountain Springs*, 3749 m, 25-VIII-1998, A, DERP; **Gilpin Co**, Tolland, 2705 m, A, INHS.

Remarks: The type male for this species had a sand grain case and was reared from Wood Lake in Boulder, Colorado and the female was described from Tolland, Colorado (Ross 1941). Only two records for this species have been reported in the SPRB since the original type specimens were collected. Nimmo (1971) suggests *L. labus* can also occur in rivers. Specimens were collected at elevations from 2705 m to 3749 m. Adults were present July to August.

Limnephilus lithus (Milne) 1935

Appendix C, page C56

Records: COLORADO, **Boulder Co**, Boulder, (Milne 1935); *Upper Long Canyon*, Flagstaff Mountain at light, 2134 m, 20-VI-1988, A, UCMC; **Douglas Co**, *S Platte R*, Chatfield State Recreation Area S of Littleton, 1676 m, 5-VII-2007, A, CSUC; **Jefferson Co**, *S Platte R*, at Kassler Bridge, 1682 m, 24-IX-2005, A, DERP; **Larimer Co**, *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 22-V-1987, A, CSUC; 1-X-2007, A, CSUC; at Picnic Rock Hwy 14 Poudre Canyon, 1819 m, 30-IX-2007, A, CSUC; *BLT*, Fort Collins, 1524 m, 14-IX-1986, A, CSUC; 21-V-1986, A, CSUC; *Mail Crk*, BLT Fort Collins, 1521 m, 6-VI-1989, A, CSUC; 17-VI-1989, A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 27-VI-1990, A, CSUC; *Rist Canyon*, 9.6 km NW Bellvue, 1982 m, 22-V-1989, A, CSUC; 23-VI-1989, A, CSUC; *Stonewall Crk*, Hwy 287, 1811 m, 7-VII-1995, A, CSUC; *Spring Crk*, Spring Canyon Dam outflow of Horsetooth Res, 1661 m, 3-X-1974, A, CSUC; *Redstone Crk*, nr Spruce Gulch, 1790 m, 5-IX-1979, A, CSUC; *BLT*, pinyon pine hillside just E of hwy 287, 1823 m, 29-V-1998, A, CSUC.

Remarks: The type specimen for this species is from Boulder, Colorado (Milne 1935). Based on the above records larvae of this species occurred in streams from the upper prairies to the lower foothills of the SPRB. Specimens were collected at elevations from 1521 m to 2134 m. Adults were present May to October.

Limnephilus moestus Banks 1908

Appendix C, page C57

Records: COLORADO, **Boulder Co**, *Wild Basin*, 3.2 km E of Wild Basin Trailhead RMNP, 2739 m, 31-VIII-1999, A, CSUC; *wetland*, just W of Red Rock Lake, 3085 m, 10-VII-1994, A, DERP; *Red Rock Lake*, W of Ward, 3078 m, 31-VII-1998, A, DERP; **Larimer Co**, *Bear Lake*, RMNP, 2904 m, 8-IV-1994, A, CSUC; *Fall R*, Willow Flat RMNP, 3275 m, 26-VII-1994, A, CSUC; *Moraine Park*, 0.8 km E Fern Lake Trailhead RMNP, 2499 m, 23-VII-1993, A, CSUC; *Icy Brk*, RMNP abv The Loch, 3103 m, 24-VIII-1988, A, CSUC; *Hidden Valley*, RMNP, 2927 m, 25-VII-1938, A, INHS; *Lake Irene*, Picnic Area RMNP, 3231 m, 24-VIII-1994, A, CSUC; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 23-VII-2002, A, CSUC; 3-VIII-2002, A, CSUC; *Joe Wright Crk*, 2926 m, 26-VII-1980, A, DERP; 9-VIII-1980, A, DERP.

Remarks: This species occurred throughout the SPRB above the foothills. Larvae probably inhabit ponds and lakes (Wiggins 1996). Specimens were collected at elevations from 2499 m 3360 m. Adults were present from April to August.

Limnephilus perpusillus Walker 1852

Appendix C, page C57

Records: COLORADO, **Boulder Co**, *wetland*, just W of Red Rock Lake, 3085 m, 8-VIII-2003, A, DERP; 15-VIII-1981, A, DERP; **Larimer Co**, *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 29-VII-2002, A, CSUC; 8-IX-2002, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 13-VIII-1995, A, CSUC; 29-VII-2009, A, DNA; *Alma*, 3109 m, 19-VIII-1949, A, USNM.

Remarks: This is another species common at the Red Rock Lake site in Boulder County, Colorado, but occurred in other headwater areas of the SPRB. Specimens were collected at elevations 2840 m to 3360 m. Adults were present July to September.

Limnephilus picturatus (MacLachlan) 1875

Appendix C, page C58

Records: COLORADO, **Boulder Co**, *N Frk Boulder Crk*, Green Lakes, 3406 m, 14-VIII-1990, A, CSUC; *trib to Jasper Crk*, Indian Peaks Wilderness, 2975 m, 12-IX-1998, A, CSUC; 12-VIII-1998, A, CSUC; *Red Rock Lake*, 3096 m, 9-VIII-1984, A, CSUC; *Isabelle Lake*, 3292 m, 7-VIII-1939, A, UCMC; *pond*, W of Long Lake Trailhead Parking area W of Ward on Brainard Lake Rd, 3200 m, 29-VII-1994, A, DERP; *Long Lake*, W of Brainard Lake, 3213 m, 29-VII-1994, A, DERP; *wetland*, W of Red Rock Lake, 3085 m, 8-VIII-2003, A, DERP; 15-VII-1981 A, DERP; **Clear Creek Co**, *pond*, just NW of Guanella Pass Parking

lots, 3550 m, 10-VIII-2002, A, DERP; *Echo Lake*, 3231 m, 30-VII-1998, A, DERP; **Larimer Co**, *The Loch*, RMNP, 3103 m, 2-VIII-1988, A, CSUC; 24-VIII-1988, A, CSUC; *Cameron Pass*, 3146 m, 18-VIII-1940, A, INHS; 14-VIII-1946, A, CSUC; *Fall Cr*, 1.6 km W of Pingree Park, 2789 m, 11-IX-2007, A, CSUC; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 3-VIII-2002, A, DERP; 19-VII-2002, A, CSUC; *Pingree Park*, 2743 m, VIII-1924, A, SEMC; 15-VIII-1934, A, CSUC.

Remarks: The type locality of *L. clausa* Banks, a synonym of *L. picturatus* (MacLachlan), is from Long Lake, Colorado (Banks 1924). There are several “Long Lakes” in Colorado; it is unknown which Long Lake is indicated by Banks (Herrmann et al. 1986). This northern Holarctic species can be common in the upper elevations of the SPRB, particularly near willow carrs. Specimens were collected at elevations from 2743 m to 3550 m. Adults were present July to September.

Limnephilus rohweri Banks 1908

Appendix C, page C58

Records: COLORADO, **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 7-VI-1995, A, CSUC; *spring*, 45 m N of Burning Bear Cmpgrd on Rd between Grant and Georgetown, 2938 m, 14-IV-1980, A, L, P, DERP; *spring*, 90 m N of Burning Bear Cmpgrd, 2938 m, 21-V-1980, A, DERP; 1-VIII-1995, A, USNM; **Teller Co**, Florissant, 2682 m, (Banks 1908).

Remarks: The type locality for this species is Florissant, Colorado (Banks 1908). The only available records from the SPRB are from headwater streams in the southern portion of the basin ranging in elevation from 2840 m to 2938 m. Adults were present April to August. Interestingly, a live adult specimen was collected from a spider web in December (personal communication with D. Ruiter).

**Limnephilus sansoni* Banks 1918

Appendix C, page C59

Records: COLORADO, **Boulder Co**, *pond*, W of Long Lake trailhead parking lot, 31-VII-1998, 3200 m, P, DERP; **Gilpin Co**, *S Boulder Crk*, 2743 m, A, (Dodds and Hisaw, 1925).

Remarks: The few available records for this caddisfly are from the upper portions of the SPRB. No further information was available for the Dodds and Hisaw (1925) Gilpin County collection. Specimens were collected from 2743 m to 3200 m in elevation.

**Limnephilus secludens* Banks 1914

Appendix C, page C59

Records: COLORADO, **Larimer Co**, *at light*, Fort Collins, 1508 m, 26-VII-1935, A, CSUC; *Lost Lake*, 2833 m, 29-VII-1995, A, DERP.

Remarks: This stream inhabiting caddisfly was rarely collected in the SPRB. Apparently, rapid larval development allows this species to exploit temporary

habitats (Wissinger et al. 2003). Specimens were collected at elevations from 1508 m to 2833 m. Adults were present in July.

Limnephilus spinatus Banks 1914

Appendix C, page C60

Records: COLORADO, **Larimer Co**, *BLT*, Redstone Estates 11.2 km W Bellvue, 2055 m, 6-VII-1990, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 2-VII-1995, A, CSUC; 29-VII-2009, A, DERP; *Sheep Crk*, oxbow of Sheep Crk nr Hartsel, 2713 m, 5-VIII-1943, A, INHS.

Remarks: A widespread but uncommonly reported species in the SPRB that occurred from the lower foothills to higher elevations. Herrmann et al. (1986) reported that this species occurred in headwater streams and springs in Colorado. Specimens were collected at elevations from 2055 m to 2840 m. Adults were present in July and August.

**Limnephilus sublunatus* Provancher 1877

Appendix C, page C60

Records: COLORADO, **Larimer Co**, *Pingree Park*, 2743 m, 1-VIII-1924, A, SEMC; *Lost Lake*, Roosevelt NF, 2833 m, 29-VII-1995, A, DERP; N of Lost Lake, 2833 m, 29-VII-1995, A, USNM.

Remarks: These few records from the upper portion of the Cache la Poudre River basin represent the only accounts of this species in the SPRB. Nimmo

(1971) reported it to be associated with standing water habitats. This species was collected at elevations from 2743 m to 2833 m. Adults were present in July and August.

**Limnephilus taloga* Ross 1938

Appendix C, page C61

Records: COLORADO, **Larimer Co**, *BLT*, pinyon pine hillside just E of hwy 287, 1823 m, 28-V-1999, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 22-VIII-2009, A, CSUC; **Weld Co**, *BLT*, Pawnee National Grassland, 1648 m, 19-VI-1986, A, CSUC; 14-V-1986, A, CSUC.

Remarks: This species occurred in small streams in the foothills and the eastern, more arid plains of Colorado (Herrmann et al. 1986). Based on the above records, it can apparently colonize intermittent streams. Specimens were collected at elevations from 1648 m to 1823 m. Adults were present in May.

**Limnephilus tarsalis* (Banks) 1920

Appendix C, page C61

Records: COLORADO, **Boulder Co**, Ward, 2813 m, 19??, A, UCMC; **Larimer Co**, Estes Park, 2304 m, 25-VII-1938, A, INHS; *Cache la Poudre R*, at Rustic, 2177 m, 28-VII-1995, A, Malicky.

Remarks: The type locality for this species is Ward, Colorado (Banks 1920), although it has rarely been collected in SPRB. Wissinger et al. (2003) suggested this species can complete their life cycle in ponds that dry up by

early to mid-summer. Specimens were collected at elevations from 2177 m to 2813 m. Adults were present in July.

Nemotaulius hostilis (Hagen) 1873

Appendix C, page C62

Records: COLORADO, **Boulder Co**, *Lost Lake*, 3.8 km W of Eldora, 2999 m, 29-IX-1977, P, UCMC; *pond*, W of Long Lake trailhead W of Brainard Lake, 3200 m, 31-VII-1998, P, DERP; *Red Rock Lake*, 8 km W of Ward, 3097 m, 15-VIII-1981, L, DERP; 9-IX-2006 L, CSUC; **Larimer Co**, *Bear Lake*, RMNP, 2904 m, 4-VIII-1994, A, CSUC; *Lost Lake*, CR 103 N of Hwy 14, 2833 m, 14-IX-2002, L, CSUC; 29-VII-1995, A, USNM; nr FR 190, 29-VII-1995, A, DERP; *outlet of Parvin Lake*, 0.32 km S of Parvin Lake Fishery Research Station, 2475 m, 10-VI-1976, P, UCMC.

Remarks: This widespread North American caddisfly typically occurs in high elevation permanent ponds (Berte and Pritchard 1986, Wissinger et al. 2003. Specimens were collected at elevations from 2475 m to 3200 m. Adults were present July to August.

Onocosmoecus unicolor (Banks) 1897

Appendix C, page C62

Records: COLORADO, **Boulder Co**, *Eldora*, at Light, 2621 m, 19-VIII-1953, A, PMNH; **Clear Creek Co**, *N Frk Clear Crk*, bridge at Blackhawk, 2455 m, 26-XII-1980, A, DERP; **Jefferson Co**, *Buffalo Crk*, at Forest Service Picnic Area, 2290 m, 23-VIII-1981, A, DERP; **Larimer Co**, *Buckhorn Crk*, 12.8 km N Masonville,

1856 m, 27-IX-1989, A, CSUC; 35.4 km N of Masonville, 2565 m, 2-X-1986, A, CSUC; 1552 m, 26-VIII-1985, A, CSUC; nr Pennock Pass, 2527 m, 12-III-1986, A, CSUC; 26-VIII-1985, A, CSUC; *Glacier Crk*, abv Sprague Lake, 2646 m, 2-VIII-1988, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 15-VIII-1990, A, CSUC; 13-VII-1993, A, CSUC; *Picnic Area*, Roosevelt NF nr Glen Haven, 2189 m, 26-VIII-1995, A, CSUC; *7 Mile Crk*, about 1 km upstrm from Rustic, 2225 m, 28-VII-1995, A, Malicky; *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 22-VIII-1997, A, CSUC; 27-VIII-1990, A, CSUC; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 14-VIII-1994, A, CSUC; 13-VIII-1998, A, CSUC; *BLT*, nr Glen Haven Picnic Area, 2189 m, 26-VIII-1985, A, CSUC; **Park Co**, *4 Mile Crk*, CR 181/FR 421 12 km W of Hwy 285, 3304 m, 29-VII-2003, A, CSUC; *South Park*, 2713 m, A, 17-VII-1899, MCZC.

Remarks: The type specimens of *O. unicolor* are from South Park, Colorado (Banks 1897). Larvae are widespread in slow streams and pond edges (Wiggins 1996). In the SPRB, it was collected from the lower foothills to nearly timberline as specimens were collected at elevations ranging from 1552 m to 3304 m. Interestingly, adults were present March through August with two odd records from October and December.

Philarctus quaeris (Milne) 1935

Appendix C, page C63

Records: COLORADO, **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 17-IX-1995, A, CSUC; 13-VIII-1995, A, CSUC; *Sheep*

Crk, oxbow of Sheep Crk nr Hartsel, 2721 m, 5-VIII-1943, A, INHS; *Fairplay*, 3034 m, 2-VIII-1938, A, CSUC.

Remarks: The only records available from the SPRB for this species are from the South Park region of Colorado. Nimmo (1971) reported this species from ponds on the plains and low mountain valleys in Alberta. However, SPRB specimens were collected only from much higher elevations ranging from 2721 m to 3034 m. Adults were present August to September.

**Psychoglypha ormiae* (Ross) 1938

Appendix C, page C63

Records: COLORADO, **Larimer Co**, *Endo Valley*, Picnic Area RMNP, 2642 m, 7-X-1997, A, DERP; *Joe Wright Crk*, 2924 m, 9-X-1980, A, DERP; *S Frk Cache la Poudre R*, 3415 m, 21-IX-2003, A, CSUC; **Park Co**, *S Frk Mosquito Crk*, upstrm from London Mine, 3475 m, 28-V-1980, A, L, P, DERP.

Remarks: Although there are few records of this species, it appeared to be widespread in the higher elevations of the basin. Specimens were collected from 2642 m to 3475 m in elevation. Adults were collected from May to October.

Psychoglypha subborealis (Banks) 1924

Appendix C, page C64

Records: COLORADO, **Boulder Co**, *Red Rock Lake*, Brainard Lake Rd, 3097 m, 19-IX-1998, A, CSUC; *Wild Basin*, RMNP Wild Basin Trailhead, 2959 m, 11-

VI-1999, A, CSUC; **Larimer Co**, *Bennett Crk*, 2300 m, 15-X-1995, A, CSUC; *Big Thompson R*, Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 19??, A, CSUC; *Cache la Poudre R*, BLT 1.6 km E of Milner Pass RMNP, 3505 m, 30-VII-1995, A, CSUC; *Glacier Crk*, YMCA of the Rockies at Estes Park, 2437 m, 19-V-2005, A, CSUC; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 25-VI-1998, A, CSUC; *Icy Brk*, abv The Loch, 3103 m, 16-III-1989, A, CSUC; 28-X-1988, A, CSUC; *Moraine Park*, RMNP, 2477 m, 31-V-1993, A, CSUC; *Twin Owls*, Picnic Area RMNP, 2507 m, 17-VI-1990, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 8-V-1994, A, CSUC; 6-IV-1991, A, CSUC; *Fort Collins*, 1508 m, 9-X-1947, A, CSUC; *Upper Beaver Meadows*, RMNP, 2560 m, 21-IV-1990, A, CSUC; **Park Co**, *spring*, 91 m N of Burning Bear Cmpgrd, 2938 m, 26-XII-1980, A, DERP; 14-IV-1980, A, DERP.

Remarks: This Nearctic, transcontinental caddisfly is the common *Psychoglypha* species in the SPRB. The larvae are apparently confined to cool running waters (Wiggins and Parker 1997). Nimmo (1971) concluded that the adults of this species can tolerate overwintering but Wiggins (1996) states it overwinters as eggs or first instar. The December record suggests it can overwinter as adults. Specimens were collected at elevations from 1508 m to 3505 m. Adults were present March to December.

Psychoronia costalis (Banks) 1901

Appendix C, page C64

Records: COLORADO, **Boulder Co**, *Brainard Lake*, Mitchell Crk Picnic Area, 3259 m, 29-VI-1986, P, DERP; 31-VII-1998, A, P, DERP; *Gillman Gulch*, off Colorado Road 94 upstream junction with Little James Crk, 2423 m, 1-VI-2005, A, CSUC; *Jenny Crk*, just S of Yankee Doodle Lake on Rollins Pass Rd, 3261 m, 10-VII-1994, P, CSUC; *at light*, 11.2 km E of Rollins Pass, 3276 m, 2-IX-1973, A; *seepage area*, NE portion of Lake Albion, 3353 m, 16-VII-1982, A, ROME; *Leavenworth Crk*, nr Waldorf, 3485 m, 30-VI-1980, P, DERP; **Clear Creek Co**, *Hoop Crk*, Hwy 40 turnout 1st switchback abv Henderson Mine Rd, 3230 m, 12-VI-2005, A, L, P, DERP; at stream gage just dwnstrm from Berthoud Pass nr Hwy 40, 3461 m, 29-VI-2005, A, DERP; *spring*, blw tailings at the Sydney Mine along Leavenworth Crk, 3271 m, 10-VI-1980, L, P, DERP; *Leavenworth Crk*, 3271 m, 10-VI-1980, A, DERP; 21-VI-1996, A, P, DERP; *ditch*, Hwy 103 about 0.4 km W of Squaw Pass Picnic Area, 3048 m, 22-VI-1980, P, DERP; *Snyder Gulch Headwaters?*, 2536 m, 21-VI-1981, P, Hodges; *Warren Gulch Headwaters?*, E of Squaw Pass Ski Area, 3194 m, 21-VI-1981, A, L, P, DERP; 27-VI-1981, A, USNM; *spring*, Guanella Pass Rd 0.4 km dwnstrm from Georgetown water supply res along S Frk Clear Crk, 2804 m, 2-V-1981, A, L, P, ROME; 2-V-1981, P, DERP; *seepage area*, W side of Guanella Pass Rd about 67 m blw Georgetown Res, 2810 m, 7-V-1994, L, DERP; 10-VIII-1985, L, DERP; *spring*, along Squaw Pass Rd, 2348 m, 30-VII-1998, A, P, DERP; *Beaver Ponds*, headwaters of Leavenworth Crk, 3627 m, 4-

VII-1980, L, DERP; *springs*, along trail to Silver Dollar Lake, 3475 m, 22-VIII-1980, P, DERP; **Gilpin Co**, *small stream*, Cold Spring Cmpgrd Hwy 119, 2780 m, 13-VII-1982, P, DERP; **Jefferson Co**, *spring*, at head of unnamed strm crossing Squaw Pass Rd, 2829 m, 29-VI-2003, A, P, DERP; **Larimer Co**, *Icy Brk*, Loch Vale blw Timberline Falls RMNP, 3208 m, 5-VII-1988, A, CSUC; *Icy Brk*, abv The Loch RMNP, 3103 m, 2-VIII-1988, L, A, CSUC; *Inn Brk*, 1.6 km NE of Chasm Lake RMNP, 3391 m, 19-VII-2008, A, CSUC; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 23-VII-2002, A, CSUC; 8-IX-2002, A, CSUC; **Park Co**, *spring*, along S Mosquito Crk upstrm from London Mine, 3438 m, 28-V-1980, A, L, DERP; *spring*, about 45 m N of Burning Bear Cmpgrd on Guanella Pass Rd, 2938 m, 14-IV-1980, A, L, P, DERP; 26-XII-1980, A, DERP.

Remarks: This species appears to be confined to seeps and backwaters of alpine streams (Herrmann et al. 1986). The upper Cache la Poudre River in Colorado is the northern most known distribution for this genus (Wiggins 1996). *Psychoronia costalis* females have shortened wings not extending past the eighth abdominal segment (Ruiter 1999). This species was collected at elevations from 2348 to 3627 m. Adults were present April to September with a single adult record from December.

**Pycnopsyche subfasciata* (Say) 1824

Appendix C, page C65

Records: COLORADO, **Larimer Co**, *Fort Collins*, 13-IX-1974, 1524 m, A, CSUC.

Remarks: This is one of two *Pycnopsyche* species that occurs as far west as the Rocky Mountains (Wiggins 1996) for this primarily eastern North American genus (Wojtowicz 1982). *Pycnopsyche subfasciata* has not been reported from the SPRB since 1974. This adult was collected in September at 1524 m in elevation.

Molannidae (Hood Case Making Caddisfly)

Molanna flavicornis Banks 1914

Appendix C, page C65

Records: COLORADO, **Boulder Co**, *Golden Gate Canyon State Park*, 2508 m, 24-VI-1984, A, CSUC; *pond*, just W of Long Lake Trailhead Parking area W of Ward on Brainard Lake Rd, 3200 m, 29-VII-1994, P, DERP; 31-VII-1998, A, DERP; *Red Rock Lake*, 8 km W of Ward, 3097 m, 29-V-1982, L, DERP; 22-VIII-1996, L, DERP; *Rainbow Lakes*, NE Lake of Rainbow Lakes, 3094 m, 16-VII-1982, A, DERP; **Clear Creek Co**, *Echo Lake*, 3231 m, 30-VII-1998, A, DERP; **Gilpin Co**, *Snowline Lake*, W of Hwy 119 at Gilpin, 2743 m, 13-VII-1982, A, DERP; *Sphagnum Bog*, at Tolland, 2704 m, 11-VII-1949, A, INHS; **Larimer Co**, *Bierstadt Lake*, RMNP, 2879 m, 4-VII-1933, A, UCMC; *Lost Lake*, nr FR 190 Roosevelt NF, 2833 m, 29-VII-1995, L, DERP.

Remarks: This is a relatively high elevation species that was collected from lentic habitats in the SPRB. The distinctive larvae inhabit mud and sand substrates of lakes and slow streams (Wiggins 1996). Specimens were collected at elevations from 2508 m to 3231 m. Adults were collected in June and July.

Philopotamidae (Fingernet Making Caddisflies)

Chimarra utahensis Ross 1938

Appendix C, page C66

Records: COLORADO, **Douglas Co**, *Cherry Crk*, Castlewood Canyon, 1994 m, 10-XI-1996, L, CSUC; **Larimer Co**, *Buckhorn Crk*, CR 23, 1550 m, 13-V-2001, L, CSUC; *Lone Pine Crk*, 2070 m, 14-X-1990, L, CSUC; *Stonewall Crk*, 1811 m, 22-XI-1994, L, CSUC; *N Frk Cache la Poudre R*, 200 m upstrm from confl with Cache la Poudre R, 1645 m, 1-III-2008, L, CSCU; above Seaman Reservoir, 1671 m, 1-VIII-2005, A, CSUC; *Spottlewood Crk*, Soapstone Prairie Natural Area, 1789 m, 5-VI-2009, A, CSUC; 22-VIII-2009, A, CSUC.

Remarks: *Chimarra utahensis* is known primarily from the Southwestern US and Northern Mexico (Armitage 1991) and not commonly reported in the SPRB. Specimens were collected at elevations from 1550 m to 2070 m. Adults were collected in August.

Dolophilodes aequalis (Banks) 1924

Appendix C, page C66

Records: COLORADO, **Boulder Co**, *Saint Vrain Crk*, 6.4 km abv Lyons, 1725 m, 19-VI-1975, A, CSUC; **Clear Creek Co**, *Chicago Crk*, at W Chicago Crk confl, 2682 m, 21-VI-1981, A, DERP; *W Chicago Crk*, cmpgrd at end of FR 188 about 13 km SW of Idaho Springs, 3012 m, 27-VI-2007, A, CSUC; **Gilpin Co**, Tolland, 2705 m, (Banks 1924); **Larimer Co**, *Big Thompson R*, YMCA of the Rockies at Estes Park, 2437 m, 7-VI-2005, A, CSUC; *Buckhorn Crk*, 32 km N of Masonville, 2033 m, 31-V-1980, A, CSUC; 10-II-1986, L, CSUC; 19.3 km N of Masonville, 1953 m, 7-X-1987, L, CSUC; nr Pennock Pass, 2526 m, 21-III-1986, A, CSUC; at Masonville, 1609 m, 26-IX-1982, P, CSUC; *Cameron Pass*, 3146 m, 7-X-1982, L, CSUC; *Cache la Poudre R*, Stove Prairie Cmpgrd, 1843 m, 16-V-1991, A, RWBC; *Glacier Crk*, YMCA of the Rockies at Estes Park, 2435 m, 24-IV-2005, A, CSUC *Pennock Crk*, CR 63 E and CR 44H, 2551 m, 11-VI-2007, A, CSUC; *Sheep Crk*, nr confl Buckhorn Crk, 2046 m, 13-VII-1995, A, CSUC; *S Frk Cache la Poudre R*, Simpson home, 1993 m, 14-VI-1986, A, CSUC.

Remarks: The type locality for this western North American (Schmid 1982) species is Tolland, Colorado (Banks 1924). In the SPRB this species occurred in streams throughout the mid-elevations of the basin. It emerged before most other caddisfly species in the SPRB, often while snow is still present (personal communication David E. Ruiter). Specimens were collected at elevations from 1609 m to 3146 m. Adults were present March to July.

Wormaldia gabriella (Banks) 1930

Appendix C, page C67

Records: COLORADO, **Larimer Co**, *Buckhorn Crk*, spider web nr stream, 2011 m, 7-X-1987, A, CSUC; 13.2 km W of Masonville, 1953 m, 23-IX-1986, A, CSUC; 12.8 km N Masonville, 1856 m, 28-IX-1989, A, CSUC; Rd 44H 35.4 km N of Masonville, 2114 m, 12-IX-1993, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 13-VIII-1995, L, CSUC.

Remarks: Colorado is apparently the eastern range limit for this species (Herrmann et al. 1986). Adult records from the SPRB were from mid-elevation streams in the northern portion of basin; however, the single larval record reported above for this genus was collected from a higher elevation spring fed area near South Park, Colorado. Specimens were collected at elevations from 1856 m to 2840 m. Adults were collected September to October.

Phryganeidae (Giant Case Making Caddisflies)

**Agrypnia colorata* Hagen 1873

Appendix C, page C67

Records: COLORADO, **Larimer Co**, *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 27-VI-1990, A, CSUC; *Lone Pine Crk*, BLT along the S slope, 1908 m, 2-VII-1999, A, CSUC.

Remarks: This Holarctic species has been collected from the mid-elevations of the northern portion of the SPRB. The larvae typically inhabit marshes and

lakes Wiggins (1998). Specimens were collected at elevations from 1627 m to 1908 m. Adults were collected in June and July.

Agrypnia deflata (Milne) 1931

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Records: COLORADO, **Boulder Co**, *pond*, W of Long Lake Trailhead W of Brainard Lake, 3200 m, 31-VII-1998, A, L, P, DERP; 29-VII-1994, A, DERP; *Red Rock Lake*, 3097 m, 7-VII-1984, L, ROME; **Larimer Co**, *Lost Lake*, Roosevelt NF nr FR 190, 2833 m, 29-VII-1995, P, DERP; *Stonewall Crk*, BLT E of Cherokee Park Rd and hwy 287, 1811 m, 26-VIII-1998, A, CSUC; *BLT, Park Crk Res*, 1779 m, 6-VIII-1995, A, CSUC.

Remarks: This standing water species occurred from the lower foothills to timberline in the SPRB. Specimens were collected at elevations from 1779 m to 3200 m. Adults were present in July and August.

Agrypnia glacialis (Hagen) 1873

Appendix C, page C68

Records: COLORADO, **Larimer Co**, *Joe Wright Crk*, abv Joe Wright Res, 3021 m, 16-VII-1981, A, ROME; *Trap Lake*, FR 156 Roosevelt NF, 3048 m, 21-VII-1999, A, DERP; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 2-VII-1995, A, CSUC; 1-VIII-1995, A, USNM; *Antero Res*, 2725 m, 7-VII-1974, A, USNM.

Remarks: This species occurred in ponds and lakes at higher elevations of the SPRB. Specimens were collected at elevations from 2725 m to 3048 m. Adults were present in July and August.

**Agrypnia straminea* Hagen 1873

Appendix C, page C69

Records: COLORADO, **Larimer Co**, *Nymph Lake*, RMNP, 2958 m, 26-VII-1983, A.

Remarks: This was the only SPRB record available and the second in Colorado for this common North American species that ranges through the Midwest to New York and Maine (Herrmann et al. 1986, Wiggins 1998). This data for this record came from a copy of Scott Herrmann's field notes provided by David E. Ruiter.

Phryganea cinerea Walker 1852

Appendix C, page C69

Records: COLORADO, **Boulder Co**, *Red Rock Lake*, 8 km W of Ward, 3097 m, 10-VII-1994, P, DERP; 13-VII-1982, A, DERP; **Larimer Co**, *unknown habitat*, Fort Collins, 1524 m, 11-VII-1990, A, CSUC; *pond*, nr Horsetooth Res, 1614 m, 25-X-1971, L, CSUC; 28-II-1982, P, CSUC; *Lost Lake*, at Poudre Pass, 2833 m, 29-VII-1995, A, USNM; 3-VII-2005, A, DREES; *BLT*, Redstone Estates 11.2 km W of Bellvue, 2078 m, 6-VII-1989, A, CSUC.

Remarks: This species can colonize high and low elevation ponds as well as rivers (Roemhild 1982). Specimens were collected at elevations from 1524 m to 3097 m. Adults were present in July.

Polycentropodidae (Trumpetnet Caddisflies)

**Cyrnellus fraternus* (Banks) 1913

Appendix C, page C70

Records: NEBRASKA, **Lincoln Co**, *S Platte R*, at N Platte, 865 m, 7-VIII-2007, A, DERP.

Remarks: This single record represents a new caddisfly species for the SPRB, recently collected from the far eastern portion of the SPRB. *Cyrnellus fraternus* is widespread from the Southeast across the Midwest (Hamilton et al. 1983, Moulton and Stewart 1996). These adult specimens were collected in August at 865 m in elevation.

**Polycentropus aureolus* (Banks) 1930

Appendix C, page C70

Records: COLORADO, **Larimer Co**, *Lost Lake*, at Poudre Pass, 2833 m, 29-VII-1995, A, USNM.

Remarks: The record above appears to be the southernmost record in the Rocky Mountains for this transcontinental North American species (Wiggins and Parker 1997). Specimens were collected at 2833 m in elevation. Adults were present in July.

Polycentropus cinereus Hagen 1861

Appendix C, page C71

Records: COLORADO, **Larimer Co**, *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; Martinez Park Fort Collins, 1513 m, 10-VII-1990, A, CSUC; Hwy 287 Bridge, 1507 m, 12-IX-1987, A, CSUC; *Big Thompson R*, at the Narrows 11.2 km W of Loveland, 1646 m, 30-VIII-08, A, CSUC; *inlet to Horsetooth Res*, SW edge of Inlet Bay, 1707 m, 16-VI-2007, A, CSUC.

Remarks: The only SPRB accounts of this species were collected from the lower foothills. Specimens were collected at elevations from 1507 m to 1707 m. Adults were present June to September.

**Polycentropus interruptus* (Banks) 1914

Appendix C, page C71

Records: COLORADO, **Boulder Co**, *Chimney Gulch*, Boulder (Banks 1914); **Clear Creek Co**; Clear Creek (Banks 1914); **Jefferson Co**, (Ross 1944); **Larimer Co**, *Weedy Lake*, at Fort Collins, 1520 m, 20-VI-1938, A, INHS.

Remarks: Ross (1944) and Banks (1914) provided a few early records of this northern species from the SPRB with limited locality information. The type specimens of *Holocentropus orotus* Banks, a synonym of *P. interruptus* (Banks), were those reported from Clear Creek, and Chimney Gulch, Boulder, Colorado.

Psychomyiidae (Tubenet Making Caddisflies)

Psychomyia flavida Hagen 1861

Appendix C, page C72

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at Broadway Ave in Boulder, 1630 m, 14-IV-1998, L; *Boulder Crk*, at Canyon mouth in Boulder, 1656 m, 25-IX-2007, L; *Saint Vrain Crk*, Longmont nr 85th and 9th Streets, 1530 m, 26-IX-2007, L; **Douglas Co**, *S Platte R*, at Kassler Bridge, 1676 m, 19-II-1982, P, USNM; 28-VI-1982, A, USNM; **Jefferson Co**, *Bear Crk*, at Evergreen, 2146 m, 16-VII-1981, A, DERP; 1st bridge in canyon abv Evergreen, 2164 m, 20-VI-1981, A, DERP; 16-VII-1981, A, DERP; at Morrison, 1756 m, 16-VII-1981, A, DERP; about 3.2 km abv Morrison, 1920 m, 15-VII-1982, A, DERP; at Corwina Park, 2057 m, 27-VI-1981, A, L, P, DERP; 29-VIII-1981, A, P, DERP; *BLT*, Idledale, 1979 m, 2-VII-1982, A, CSUC; *Troublesome Crk*, at Kittredge, 2088 m, 20-VI-1981, A, INHS; 5-VII-1981, A, DERP; *Evergreen Lake*, 2156 m, 20-VI-1981, A, P, DERP; *S Platte R*, at bridge at inlet to Chatfield Res, 1655 m, 28-VI-1982, A, DERP; **Larimer Co**, *Big Thompson R*, 8 km dwnstrm from Olympus Dam nr Estes Park, 2146 m, 25-VII-1997, A, CSUC; Hwy 34 nr Canyon mouth blw WWTP, 1611 m, 16-VII-1997, A, CSUC; *Cache la Poudre R*, BLT blw WWTP Hwy 14, 1640 m, 13-VII-1989, A, CSUC; at Fort Collins, 1508 m, 21-IX-1993, L, USGSNWQL; at mouth of canyon nr Fort Collins, 1594 m, 16-VIII-1994, L, USGSNWQL, 17-VII-1994, L, USGSNWQL; Picnic Rock Access, 1602 m, 16-V-1991, A, RWBC; *inlet to Horsetooth Res*, SW edge of Inlet Bay, 14-VII-2007, 1707 m, A, CSUC; *Lone Pine Crk*, W of Livermore, 1819 m, 22-VI-1986,

A, CSUC; *N Frk Cache la Poudre R*, Phantom Canyon Preserve, 1627 m, 27-VI-1990, A, CSUC; 26-VII-1997, A, CSUC; *N Poudre Canal*, CR 17 & 70 malaise trap, 1640 m, 18-VII-1996, A, CSUC; 8-VIII-1996, A, CSUC; *Fossil Crk*, at light Fort Collins, 1505 m, 9-VIII-1986, A, DERP; **Park Co**, *S Frk S Platte R*, about 0.4 km blw Antero Res, 2718 m, 7-VII-1981, A, CSUC; about 3.2 km blw Antero Res, 2717 m, 7-VII-1981, A, CSUC; blw confl with Mid Frk S Platte R, 2663 m, 24-VI-1980, A, CSUC; 7-VII-1981, A, CSUC; nr confl with Tarryall Crk, 2502 m, 2-VII-1986; A, CSUC; at hwy 285 bridge, 2802 m, 7-VII-1981, A, CSUC; 31-VII-1980, A, CSUC; 0.4 km blw Lake George, 2464 m, 6-VI-1981, A, CSUC; 7-VII-1981, A, CSUC; about 11.2 km blw Elevenmile Res in Elevenmile Canyon, 2464 m, 6-VI-1981, A, CSUC; 7-VII-1981, A, CSUC; at jct of Hwy 24 and Hwy 9, 2711 m, 7-VII-1974, A, USNM.

Remarks: This Holarctic species was common throughout the foothill region of the SPRB and Colorado (Herrmann et al. 1986). In eastern North America this species appears to be parthenogenic, with males apparently rare or absent in many populations; whereas in western North American populations, males and females appear to be in equal proportions (Corbet 1966, Nimmo 1966, Roy and Harper 1981, Wiggins 1996, Flint 2008). In the SPRB, this species was collected at elevations from 1505 m to 2802 m. Adults were present from May to August.

Rhyacophilidae (Freeliving Caddisflies)

Rhyacophila alberta Banks 1918

Appendix C, page C72

Records: COLORADO, **Boulder Co**, *Mid Boulder Crk*, Hessie Roosevelt NF, 3190 m, 12-IX-1998, A, CSUC; *S Frk Mid Boulder Crk*, Hessie, 3190 m, 12-VIII-1998, A, CSUC; *Mid Saint Vrain Crk*, about 9.6 W of Peaceful Valley, 3002 m, 10-IX-1976, A, CSUC; **Larimer Co**, *Upper Beaver Meadows*, Picnic Area RMNP, 2874 m, 3-X-1994, A, CSUC; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 4-IX-1994, A, CSUC; *Endo Valley*, RMNP, 2642 m, 30-VIII-1990, A, CSUC; 7-X-1997, A, CSUC; *Icy Brk*, RMNP abv The Loch, 3103 m, 24-VIII-1988, A, CSUC; *Inn Brk*, 1.6 km NE of Chasm Lake RMNP, 3391 m, 19-VII-2008, L, CSUC; *Joe Wright Crk*, 3057 m, 9-X-1980, A, CSUC; 4-VIII-1978, A, CSUC.

Remarks: *Rhyacophila alberta* occurred throughout the SPRB above the mid-foothills of the SPRB where it reaches its southeastern range limit (Giersch 2002). This species was collected at elevations from 2487 m to 3391 m. Adults were present August to October.

Rhyacophila angelita Banks 1911

Appendix C, page C73

Records: COLORADO, **Boulder Co**, *N Saint Vrain Crk*, 14.4 km W of Lyons, 1913 m, 28-IX-1986, A, CSUC; *Wild Basin*, 3.2 km E of Wild Basin Trailhead RMNP, 2739 m, 31-VIII-1999, A, CSUC; *Hessie*, 3190 m, 14-VIII-1953, A, PMNH; *at light*, Eldora, 2621 m, 19-VIII-1953, A, PMNH; 30-VIII-1953, A,

PMNH; *Mid Boulder Crk*, hwy 119 Barker Res, 2512 m, 6-VIII-1973, A, USNM; between Riverside & Lyons, 2213 m, 15-VIII-1981, A, INHS; **Clear Creek Co**, *W Frk Clear Crk*, bridge at Hwy 40 and I-70, 2566 m, 26-XII-1980, A, DERP; **Gilpin Co**, *Lump Gulch*, 2729 m, 23-VIII-1954, A, UCMC; 27-VIII-1954, A, UCMC; **Jefferson Co**, *Deer Crk*, at Phillipsburg, 1975 m, 23-VIII-1981, A, DERP; *Turkey Crk*, nr Aspen Park, 2445 m, 8-VIII-1973, A, USNM; *Bear Crk*, bridge just abv Rosedale, 2243 m, 20-VI-1981, A, DERP; *Clear Crk*, nr State hwy 119, 2210 m, 5-XI-1988, A, CSUC; **Larimer Co**, *Big Thompson R*, blw Moraine Park nr Estes Park, 2440 m, 8-VIII-1996, P, USGSNWQL; 17-VII-2002, L, USGSNWQL; *Buckhorn Crk*, 30.4 km N of Masonville, 1995 m, 16-X-1987, A, CSUC; *Cache la Poudre R*, blw confl with Corral Crk, 2955 m, 17-IX-1988, A, CSUC; *Cameron Pass*, 3146 m, 17-VIII-1948, A, ESUW; *Hidden Valley*, RMNP, 2833 m, 14-VIII-1990, A, CSUC; *Endo Valley*, RMNP, 2642 m, 30-VIII-1990, A, CSUC; 7-X-1997, A, CSUC; *Fall R*, 0.4 km W Cascade Cottages RMNP, 2592 m, 12-VII-1985, L, CSUC; *BLT*, Fern Lake Trailhead RMNP, 2487 m, 4-IX-1994, A, CSUC; 14-VIII-1996, A, CSUC; *Glen Haven*, Picnic Area Roosevelt NF, 2189 m, 11-VIII-1995, A, CSUC; 26-VIII-1995, A, CSUC; *Hague Crk*, RMNP, 3000 m, 8-IX-2007, A, CSUC; *Joe Wright Crk*, 3057 m, 20-IX-1980, A, CSUC; 2962 m, 19-X-1980, A, CSUC; 20-IX-1980, A, CSUC; 2924 m, 9-X-1980, A, CSUC; 20-IX-1980, A, CSUC; *7 Mile Crk*, about 1 km upstrm from Rustic, 2225 m, 28-VII-1995, A, Malicky; *Upper Beaver Meadows*, Heliport RMNP, 2539 m, 3-VIII-1994, A, CSUC; Picnic Area RMNP, 2874 m, 27-VIII-1990, A, CSUC; *Young Gulch*, 100 m upstrm from confl with Cache la

Poudre R, 1829 m, 15-VII-1995, A, CSUC; **Park Co**, *Tarryall Crk*, Hwy 285, 2943 m, 3-VIII-1986, A, CSUC; 8-VI-1905, A, CSUC.

Remarks: A common *Rhyacophila* species found in cold, clear streams throughout the upper portion of the SPRB. This species was collected at elevations from 1829 m to 3190 m. Adults were present June to December.

**Rhyacophila bifila* Banks 1914

Appendix C, page C73

Records: COLORADO, **Larimer Co**, *Cache la Poudre R*, Hwy 14 9.6 km abv Hwy 287, 1652 m, 15-VII-1996, A, CSUC; Hwy 14 at Rustic, 2177 m, 28-VII-1995, A, Malicky.

Remarks: The few SPRB accounts of this species were collected from the mid-elevation reaches of the Cache la Poudre River basin. Larvae of this widespread North American species mostly occur in deep rapids that are difficult to sample (Smith 1968, Peck and Smith 1977). Specimens were collected at elevations from 1652 m to 2177 m. Adults were present in July.

Rhyacophila brunnea Banks 1911

Appendix C, page C74

Records: COLORADO, **Boulder Co**, *Saint Vrain Crk*, about 6 km upstrm from Raymond, 3085 m, 23-VII-1976, A, CSUC; *Mid Boulder Crk*, 2nd bridge east of Eldora, 2681 m, 24-VII-2007, A, CSUC; *Mid Boulder Crk*, bridge at Eldora, 2681 m, 25-VI-2004, A, CSUC; **Clear Creek Co**, *Pedee Crk*, at bridge, 2365 m,

20-VI-1981, L, DERP; *S Frk Clear Crk*, about 0.4 km dwnstrm from Georgetown water supply Res, 2804 m, 2-V-1981, L, DERP; *Clear Crk*, at Idaho Springs, 2314 m, 5-VIII-1973, A, USNM; *W Frk Clear Crk*, at 1st bridge upstrm from Clear Creek confl, 2560 m, 10-VIII-1985, A, DERP; bridge at Hwy 40 & I 70, 2566 m, 26-XII-1980, A, DERP; **Gilpin Co**, *small stream*, Cold Spring Cmpgrd Hwy 119, 2780 m, 13-VII-1982, P, DERP; **Jefferson Co**, *S Platte R*, Cheesman Canyon, 1950 m, 2-VI-1981, L, DERP; *Elk Crk*, at Hwy 285 Shaffers Crossing, 2423 m, 10-VIII-1973, A, USNM; **Larimer Co**, *Fall R*, Endo Valley Picnic Area, 2637 m, 22-VII-1987, A, CSUC; *Fall Crk*, Cirque Meadow at Pingree Park, 2988 m, 11-XI-2007, L, CSUC; 0.28 km E Endo Valley RMNP, 2637 m, 25-VI-1985, L, CSUC; *Glacier Crk*, 0.8 km SW of Sprague Lake Cmpgrd RMNP, 2646 m, 2-VIII-1988, A, CSUC; *Hidden Valley*, Picnic Area RMNP, 2611 m, 7-VIII-1995, A, CSUC; *Glen Haven*, Picnic Area Roosevelt NF, 2189 m, 11-VIII-1995, A, CSUC; *outlet of Twin Lakes Res*, at CR 63, 2735 m, 11-IX-2007, L, CSUC; **Park Co**, *Tarryall Crk*, Hwy 285, 2943 m, 3-VIII-1986, A, CSUC; 8-VIII-1973, A, USNM; *S Platte R*, nr Fairplay, 2018 m, 8-VIII-1973, A, USNM; *Mosquito Crk*, FR 438 / CR 12 W of Park City, 3275 m, A, 9-VIII-2003, CSUC.

Remarks: This common species may occur in every medium to large sized stream from the plains to high elevations in the SPRB. Many previous records are listed as *R. acropedes* (Banks), a synonym of *R. brunnea* (Smith and Manuel 1984). Specimens were collected at elevations from 1950 m to 3085 m. Adults were present June to August.

Rhyacophila coloradensis Banks 1905

Appendix C, page C74

Records: COLORADO, **Boulder Co**, *Boulder Crk*, at jct N Frk Boulder Crk, 2121 m, 6-V-1995, A, CSUC; 4.8 km W of Sugarloaf Rd & Hwy 119, 2317 m, 1-IV-1989, A, CSUC; at canyon mouth in Boulder, 1656 m, 13-IV-1995, L; 1-IX-1989, A, CSUC; at Arapahoe Rd in Boulder, 1656 m, 9-VIII-1981, A, INHS; *N Frk Boulder Crk*, at Falls, 2134 m, 9-VIII-1981, A, Herrmann; *N Saint Vrain Crk*, 1.8 km upstrm of Buttonrock Dam, 1914 m, 31-VII-1998, A, CSUC; 11.2 km W of Lyons, 1823 m, 28-IX-1986, A, CSUC; blw Thunder Lake, 3227 m, 6-VII-1989, A, CSUC; *S Saint Vrain Crk*, Hwy 7, 1652 m, 19-VI-1986, A, CSUC; *S Boulder Crk*, 1st bridge blw Gross Res, 2082 m, 15-VIII-1981, A, INHS; at Pinecliffe, 2426 m, 15-VIII-1981, A, INHS; bridge blw Beaver Crk at Hwy 72, 2454 m, 15-VIII-1981, A, INHS; *Mid Saint Vrain Crk*, btwn Riverside & Lyons, 2213 m, 15-VIII-1981, A, INHS; *Saint Vrain Crk*, at Hwy 36, 1606 m, 15-VIII-1981, A, INHS; **Clear Creek Co**, *Chicago Crk*, at Chicago Frks Picnic Ground, 2816 m, 21-VI-1981, A, DERP; at W Chicago Crk confl, 2682 m, 27-VI-1981, A, DERP; 21-VI-1981, A, DERP; 1st bridge blw Georgetown Res, 2633 m, 3-VII-1981, A, DERP; at Idaho Springs, 2314 m, 5-VIII-1973, A, USNM; 10-VIII-1985, A, DERP; *W Frk Clear Crk*, at 1st bridge upstrm from Clear Creek confl, 2560 m, 10-VIII-1985, A, DERP; bridge at Hwy 40 and I-70, 2566 m, 26-XII-1980, A, DERP; **Douglas Co**, *Trout Crk*, CR 67, 2024 m, 17-IV-1982, A, DERP; *S Platte R*, at Deckers, 1950 m, 23-VI-1974, A, USNM; at S Platte, 1859 m, 21-VII-1987, A, DERP; **Gilpin Co**, *Mammoth Crk*, at S Boulder Crk confl, 2743 m, 9-

VIII-1981, A, Herrmann; *S Boulder Crk*, 1st bridge abv Rollinsville, 2562 m, 9-VIII-1981, A, DERP; 19-VI-1986, A, CSUC; **Jefferson Co**, *Bear Crk*, bridge just abv Rosedale, 2243 m, 20-VI-1981, A, DERP; 16-VII-1981, A, INHS; at Corwina Park, 2057 m, 29-VIII-1981, A, INHS; 20-VI-1981, A, DERP; *S Platte R*, at the USGS gage immediately dwnstrm from Cheesman Res, 2018 m, 28-X-1984, A, DERP; at Kassler Bridge, 1682 m, 15-VIII-1981, A, INHS; *N Frk S Platte R*, at Riverview, 2024 m, 23-VIII-1981, A, INHS; *Elk Crk*, at hwy 285 Shaffers Crossing, 2423 m, 11-VIII-1973, A, USNM; *BLT*, Idledale, 1967 m, 2-VII-1982, A, CSU; 7-VII-1999, A, CSUC; *Clear Crk*, hwy 119, 2210 m, 5-XI-1988, A, CSU; *Chimney Gulch*, 3.2 km W of Golden, 1754 m, 7-VII-1999, A, CSU; 22-VII-1907, A, UCMC; **Larimer Co**, *Big Thompson R*, Hwy 34 at Drake, 1878 m, 8-VII-1998, A, CSUC; 8 km dwnstrm from Olympus Dam nr Estes Park, 2146 m, 25-VII-1997, A, CSUC; 10-VII-1997, A, CSUC; YMCA of the Rockies Estes Park, 2437 m, 7-VI-2007, A, CSUC; Viestenz-Smith Park 9.8 km W Loveland, 1853 m, 17-VI-2005, A, CSUC; *Buckhorn Crk*, 16 km N of Masonville, 1920 m, 7-X-1987, A, CSUC; *Cache la Poudre R*, Fort Collins Lions Park at Overland Trail Rd, 1544 m, 9-IX-1995, A, CSUC; 6.4 km abv Rustic, 2267 m, 14-IV-1990, A, CSUC; 9.6 km abv Hwy 287 on Hwy 14, 1652 m, 31-VIII-1996, A, CSUC; *Fall R*, 91 m S Lawn Lake Trailhead RMNP, 2598 m, 3-VII-1985, L, CSUC; *Glacier Crk*, YMCA of the Rockies Estes Park, 2345 m, 7-V-2005, A, CSUC; *Icy Brk*, RMNP abv The Loch, 3103 m, 14-VI-1989, A, CSUC; *S Frk Cache la Poudre R*, CR 63E, 2534 m, 19-V-1995, A, CSUC; 63 E Rd at Fish Crk, 2534 m, 4-IX-1993, A, CSUC; *Young Gulch*, Hwy 14 Poudre

Canyon, 1769 m, 3-IV-1987, A, CSUC; *Joe Wright Crk*, 2962 m, 26-VII-1980, A, CSUC; 3042 m, 26-VI-1979, A, CSUC; 28-VI-1979, A, CSUC; 2924 m, 12-VII-1980, A, CSUC; 26-VI-1979, A, CSUC; *S Frk Cache la Poudre R*, Rd 63E, 2534 m, 19-V-1995, A, CSUC; *Young Gulch*, at Hwy 14 bridge Cache la Poudre Canyon, 1769 m, 3-IV-1987, A, CSUC; **Park Co**, at Hwy 285 nr Bailey, 2364 m, 8-VIII-1973, A, USNM; *Geneva Crk*, at hwy 285 at Grant, 2615 m, 8-VIII-1973, A, USNM.

Remarks: The type locality for this common species is Fort Collins, Colorado (Banks 1905). This is another very common species throughout Western North America (Peck and Smith 1977) and the SPRB at sites upstream from the lower foothills. Larvae inhabit the margins and deeper portions of rapid streams (Smith 1968). Specimens were collected at elevations from 1544 m to 3227 m. Adults were present April to December.

Rhyacophila harmstoni Ross 1944

Appendix C, page C75

Records: COLORADO, **Clear Creek Co**, *Clear Crk*, nr Loveland Pass, 3149 m, 8-VIII-1973, A, USNM; **Larimer Co**, *Fall R*, Willow Flat RMNP, 3275 m, 26-VII-1994, A, CSUC; *Spruce Crk*, BLT RMNP, 2957 m, 29-VII-1989, A, CSUC; *Cameron Pass*, 3146 m, 18-VIII-1947, A, ESUW; *S Frk Cache la Poudre R*, 10.4 km from Pingree Park on Mummy Pass Trail, 3360 m, 25-VIII-2002, A, CSUC.

Remarks: This species is common in the upper portions of the SPRB, north of the Clear Creek drainage. It is interesting that few records are reported south of Clear Creek and that no records are reported from the Wyoming portion of the SPRB. This species was collected between 2975 m to 3360 m in elevation. Adults were present in July and August.

Rhyacophila hyalinata Banks 1905

Appendix C, page C75

Records: COLORADO, **Clear Creek Co**, *Hoop Crk*, 8.8 km west of Empire, just off Highway 40, 2937 m, 28-I-2008, L, CSUC; **Larimer Co**, *Fall R*, 0.28 km W Cascade Cottages RMNP, 2592 m, 11-VI-1985, L, CSUC; Willow Flat RMNP, 26-VII-1994, A, CSUC; *Endo Valley*, Picnic Area RMNP, 2642 m, 7-VIII-1995, A, CSUC; *Inn Brk*, near Chasm Lake RMNP, 3391 m, 19-VII-2008, L, CSUC; *Spruce Crk*, BLT RMNP, 2957 m, 29-VII-1989, A, CSUC; *Joe Wright Crk*, 2962 m, 23-VIII-1980, A, CSUC; 2924 m, 8-IX-1978, A, CSUC; 23-VIII-1980, A, DERP.

Remarks: Another high elevation species apparently constrained between the Clear Creek and Cache la Poudre River basins in Colorado which may be an artifact of collecting efforts or some unidentified natural occurring environmental factors. Specimens were collected at elevations from 2592 m to 3391 m. Adults were present in July and September.

Rhyacophila pellisa Ross 1938

Appendix C, page C76

Records: COLORADO, **Boulder Co**, at *Hessie*, 3190 m, 14-VIII-1953, A, PMNH; *S Saint Vrain Crk*, 3.2 km blw Riverside, 2177 m, 8-VIII-1975, A, CSUC; *Mid Boulder Crk*, bridge at Eldora, 2681 m, 24-VII-2004, A, CSUC; **Clear Creek Co**, *Chicago Crk*, at Chicago Frks Cmpgrd, 2816 m, 30-VII-1998, A, DERP; at W Chicago Crk confl, 2682 m, 27-VI-1981, A, DERP; 2-X-2005, A, CSUC; *Clear Crk*, bridge at W end of Idaho Springs, 2316 m, 5-VII-1981, A, DERP; *S Frk Clear Crk*, at Clear Crk Cmpgrd, 3194 m, 2-VIII-1981, A, DERP; *Pedee Crk*, at bridge, 2365 m, 20-VI-1981, A, DERP; **Gilpin Co**, *S Boulder Crk*, at Pinecliffe, 2426 m, 15-VIII-1981, A, INHS; *Mammoth Crk*, at S Boulder Crk confl, 2743 m, 9-VIII-1981, A, Herrmann; *S Boulder Crk*, 1st bridge abv Rollinsville, 2562 m, 9-VIII-1981, A, DERP; *Jenny Lind Gulch*, 2682 m, 9-VIII-1981, A, DERP; **Jefferson Co**, *Elk Crk*, at hwy 285 Shaffers Crossing, 2423 m, 9-VIII-1973, A, USNM; **Larimer Co**, *Big Thompson R*, Estes Park, 2313 m, 30-VI-2007, A, DERP; *Fall R*, 1.6 km E of Hidden Valley Rd RMNP, 2620 m, 16-VI-2007, A, CSUC; Endo Valley Picnic Grounds RMNP, 2642 m, 22-VII-1987, A, CSUC; 13-VII-1993, A, CSUC; *Fish Crk*, 1.6 km SE of Estes Park, 2316 m, 16-VI-2007, A, CSUC; *Glacier Crk*, 0.8 km SW of Sprague Lake Cmpgrd RMNP, 2646 m, 2-VIII-1988, A, CSUC; *in fast strms*, RMNP, 3049 m, 9-VIII-1947, A, ESUW, *Joe Wright Crk*, 3057 m, 24-VIII-1980, A, CSUC; 2962 m, 23-VIII-1980, A, CSUC; 3042 m, 2-VIII-1978, A, CSUC; 2924 m, 23-VIII-1980, A, CSUC; 2911 m, 23-VIII-1979, A, CSUC; *7 Mile Crk*, 1 km upstrm from Rustic,

2225 m, 28-VII-1995, A, Malicky; **Park Co**, *Tarryall Crk*, Hwy 285, 2943 m, 3-VIII-1986, A, CSUC; Hwy 285 nr Como, 2943 m, 8-VIII-1973, A, USNM; 3-VIII-1986, A, CSUC; *N Frk S Platte R*, at hwy 285 nr Bailey, 2447 m, 8-VIII-1973, A, USNM; *Geneva Crk*, at Grant, 2616 m, 2-VIII-1981, A, INHS; *Mosquito Crk*, FR 438/CR 12 W of Park City, 3275 m, 9-VIII-2003, A, CSUC; *Buckskin Crk*, FR 416 W of Alma, 3207 m, 9-VIII-2003, CSUC.

Remarks: The type locality is Cascade Lodge in RMNP just west of Estes Park (Ross 1938). Based on these records, this species was common throughout the mid- and high-elevation streams throughout the SPRB. Specimens were collected at elevations from 2177 m to 3275 m. Adults were present June to October.

**Rhyacophila vao* Milne 1936

Appendix C, page C76

Records: COLORADO, **Larimer Co**, *Endo Valley*, Picnic Area RMNP, 2642 m, 15-VIII-1990, A, CSUC; *Fall R*, at confl with Chiquita Crk, 2640 m, 3-VIII-1984, A; *7 Mile Crk*, at Rustic, 2225 m, 25-VII-1995, A, USNM.

Remarks: This western species was reported from RMNP as *R. wallowa* Milne by Herrmann (1990) and McCutchan and Lewis (2002), but prior to those records it was synonymized with *R. vao* Denning by Smith and Manuel (1984). Specimens were collected at elevations from 2225 m to 2642 m. Adults were present in July and August.

Rhyacophila verrula Milne 1936

Appendix C, page C77

Records: COLORADO, **Boulder Co**, *S Frk Mid Boulder Crk*, at Hessie, 3190 m, 12-IX-1998, A, CSUC; *S Saint Vrain Crk*, abv Long Lake, 3204 m, 2-X-1999, A, CSUC; *Wild Basin*, 3.2 km E Wild Basin Trailhead RMNP, 2739 m, 31-VIII-1999, A, CSUC; *N Frk Boulder Crk*, at Falls, 2134 m, 9-VIII-1981, A, Herrmann; **Clear Creek, Co**, *Chicago Crk*, 2713 m, 2-X-2005, A, CSUC; **Gilpin Co**, *small stream*, Cold Spring Cmpgrd Hwy 119, 2780 m, 13-VII-1982, L, DERP; **Larimer Co**, *Cache la Poudre R*, blw confl with Corral Crk, 2955 m, 17-IX-1988, A, CSUC; 14.4 km W of Hwy 287, 1697 m, 17-IX-1977, A, CSUC; *Endo Valley*, RMNP, 2642 m, 30-VIII-1990, A, CSUC; 7-X-1997, A, CSUC; *Fall Crk*, at Cirque Meadows, 11-IX-2007, 2988 m, A, CSUC; *Fall R*, 0.28 km W Cascade Cottages, 2592 m, 25-VII-1985, L, CSUC; *Icy Brk*, abv The Loch, 3103 m, 24-IX-1988, A, CSUC; *Sheep Crk*, nr jct with Buckhorn Crk, 2046 m, 15-IX-1996, A, CSUC.

Remarks: This common species occurred throughout the SPRB upstream from the lower foothills. Giersch (2002) revised the *R. verrula* and *alberta* species groups. Apparently, *R. verrula* is the only known larva of a *Rhyacophila* species that feeds exclusively on plant material (Smith 1968, Wiggins 1996).

Specimens were collected at elevations from 1697 m to 3204 m. Adults were present August to October.

**Rhyacophila vofixa* Milne 1936

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Records: COLORADO, **Larimer Co**, *Inn Brk*, 1.6 km NE of Chasm lake RMNP, 3390 m, 19-VII-2008, A, CSUC.

Remarks: The above account represents a new species in the SPRB.

Rhyacophila vofixa is restricted to swift mountain streams of western North America (Nimmo 1971, Wiggins and Parker 1997). The adult was collected in July at an elevation of 3390 m.

Uenoidae (Uenoid Case Making Caddisflies)

Neophylax splendens Denning 1948

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Records: COLORADO, **Larimer Co**, *Buckhorn Crk*, about 9.6 km W of Horsetooth Res, 1651 m, 22-IX-1986, A, CSUC; *Pennock Frk*, N of Masonville, 2526 m, 22-IX-1993, A, CSUC; *Tenmile Crk*, 1910 m, 5-X-1996, A, CSUC; *Young Gulch*, 1.6 km abv Hwy 14, 1840 m, 4-X-1987, A, CSUC; *Hidden Valley*, Picnic Area RMNP, 2927 m, 12-X-1991, A, CSUC; *7 Mile Crk*, about 1.6 km abv Rustic on FR 225, 2225 m, 28-VII-1995, L, DERP.

Remarks: This species occurred in the mid-foothills in the northern portion of the SPRB. Specimens were collected at elevations from 1651 m to 2927 m.

Adults were present in September and October.

Neothremma alicia Dodds and Hisaw 1925

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Records: COLORADO, **Boulder Co**, *Como Crk*, CU Science Lodge, 2926 m, 19-VI-1939, A, INHS; 24-VII-1939, L, INHS; *S Saint Vrain Crk*, about 3.2 km blw Riverside, 2177 m, 8-VIII-1975, A, CSUC; **Clear Creek Co**, *seepage area*, S side of hwy 103 just E of Squaw Pass Picnic Area, 2984 m, 7-V-1994, L, DERP; *spring*, about 0.4 km dwnstrm from the Georgetown water supply Res, 2804 m, 2-V-1981, P, DERP; *spring*, along Guanella Pass Rd about 0.4 km dwnstrm from Georgetown water supply Res along S Frk Clear Crk, 2804 m, 2-V-1981, P, DERP; *small stream*, Cold Spring Cmpgrd Hwy 119, 2780 m, 13-VII-1982, L, P, DERP; **Gilpin Co**, *inlet stream*, Crater Lake, 3200 m, 28-VII-1991, P, DERP; *seepage area*, along Rollins Pass Rd about 3.2 km uphill from E Portal, 2846 m, 10-VII-1994, A, DERP; **Larimer Co**, Cascade Lodge Estes Park, 2-VIII-1931, A, INHS; *Dream Lake*, Estes Park, 3018 m, 18-VIII-1934, A, INHS; *Lion Gulch*, Lion Gulch Trail about 3.2 km from Rd, 2547 m, 5-VI-1987, L, DERP.

Remarks: The type specimen of this species was collected from South Boulder Creek, Boulder County, Colorado (Dodds and Hisaw 1925). This species occurred in small headwater springs at higher elevations in the SPRB. Larvae require two years to complete development (Ogilvie and Clifford 1986). Specimens were collected at elevations from 2177 m to 3200 m. Adults were present June to August.

**Oligophlebodes ardis* Ross 1941

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Records: COLORADO, **Clear Creek Co**, *Swift Crk*, Berthoud Pass, 3412 m, 24-VII-1938, L, A, INHS; **Park Co**, *spring*, CR4 N of Fairplay approximately 0.6 km from Hwy 9, 3363 m, 28-VII-2009, A, DERP.

Remarks: The type locality for this species was near Berthoud Pass in Clear Creek County, Colorado (Ross 1941). Larvae typically inhabit the most turbulent sections of high elevation streams (Wiggins 1996).

Oligophlebodes minutus (Banks) 1897

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Records: COLORADO, **Boulder Co**, *Rock Crk*, Hwy 7, 2487 m, 19-VI-1986, A, CSUC; **Clear Creek Co**, *Pedee Crk*, at bridge, 2365 m, 20-VI-1981, A, DERP; *S Frk Clear Crk*, 0.4 km blw Green Lake, 2865 m, 2-VIII-1981, A, DERP; *Chicago Crk*, bridge at W Chicago Crk confl, 2682 m, 21-VI-1981, A, INHS; *Clear Crk*, 1st bridge blw Georgetown Res, 2633 m, 3-VII-1981, A, DERP; at confl with W Clear Crk, 2512 m, 3-VII-1981, A, DERP; *W Frk Clear Crk*, at 1st bridge upstrm from Clear Crk Confl, 2560 m, 10-VIII-1985, A, DERP; bridge at Hwy 40 & I-70, 2566 m, 26-XII-1980, A, DERP; **Jefferson Co**, *Bear Crk*, bridge just abv Rosedale, 2243 m, 20-VI-1981, A, DERP; **Larimer Co**, *Big Thompson R*, 8 km dwnstrm from Olympus Dam nr Estes Park, 2146 m, 10-VII-1997, A, CSUC; *Fall R*, Endo Valley Picnic Area RMNP, 2637 m, 22-VII-1987, A, CSUC; 7-VIII-1995, A, CSUC; RMNP, 3275 m, 26-VII-1994, A, CSUC; *Hidden Valley*,

Picnic Area RMNP, 2833 m, 2-VII-1990, A, CSUC; *Joe Wright Crk*, 3057 m, 10-VIII-1980, A, CSUC; 27-VII-1980, A, DERP; 3021 m, 16-VII-1981, A, CSUC; 16-VII-1981, A, CSUC; 2962 m, 23-VIII-1980, A, CSUC; 9-VIII-1980, A, CSUC; *S Frk Cache la Poudre R*, along 63E Rd, 2534 m, 6-VIII-1995, A, CSUC; *Spruce Crk*, BLT RMNP, 2957 m, 29-VII-1989, A, CSUC; **Park Co**, *High Crk*, High Crk Federal Preserve 14.4 km S of Fairplay, 2840 m, 17-VII-1995, A, CSUC; 29-VII-2009, A, DERP; *Tarryall Crk*, Hwy 285, 2943 m, 3-VIII-1986, A, CSUC.

Remarks: This species was common in streams in the upper foothills portion of the SPRB. Specimens were collected at elevations from 2146 m and 3275 m. Adults were present July to August. The December collection was likely the result of a dead insect removed from a spider web.

Discussion Caddisflies (Trichoptera)

Sixteen families, 62 genera, and 156 caddisfly species (Table 7) were reported from nearly 2,400 caddisfly records from 744 unique collection locations within the SPRB. Thirteen species are reported from the basin for the first time. Twenty-two species were described from the basin. One family, Limnephilidae, was the most diverse with 50 species (33% of the total known caddisfly species), 24 of which are in the genus *Limnephilus*. Three families have only one species. *Hydropsyche occidentalis* was the most commonly reported caddisfly in the SPRB.

Caddisflies were reported from all elevations of the SPRB (Table 8). There were 99 species reported from the mountains, 105 from the foothills

transition zone, and 28 on the plains (Table 8). Similar to the mayflies and stoneflies, the plains were the least sampled area for caddisflies. Six species were reported from all three physiographic provinces: *Brachycentrus americanus*, *Agraylea multipunctata*, *Hydropsyche occidentalis*, *Hydropsyche oslari*, *Limnephilus diversus*, and *Oecetis inconspicua* which had the widest elevational distribution from approximately 865 m to 3,100 m. Nine species, such as *Leptocerus americanus*, a species more typical of Midwestern and eastern North America, were apparently restricted to the plains. Thirty-one species were reported from only the foothills transition zone. Several species reported from the foothills were more common in the mountains or plains but may find their ecological limits here which may partially explain the relatively high diversity of the foothills. Thirty-six species are reported from only the mountains.

Adult caddisflies were collected in every month except January and February (Table 9). The number of adult caddisflies species peaked in July with 113 and August with 97 adult species present. *Onocosmoecus unicolor* (Banks) had the longest active adult period from March to December.

Four new caddisfly state records and fourteen new SPRB records were reported for the first time. *Leptocerus americanus*, *Asynarchus circopa*, *Orthotrichia cristata*, and *Helicopsyche* n. sp. are reported from Colorado and the SPRB for the first time. One rare long horned caddisfly, *Ochrotrichia susanae*, known from three populations worldwide with one in the SPRB, is

currently in emergency petition under the Endangered Species Act (Mazzacano 2008).

Summary

There were a total of 291 EPT species reported from the SRPB comprised of 69 mayfly (Ephemeroptera), 66 stonefly (Plecoptera), and 156 caddisfly (Trichoptera) species from nearly 5,000 records. Among 1,208 unique collection locations, approximately 11 percent of the records were from the plains, 61 percent from the foothills, and 28 percent from the mountains. The foothills transition zone was the best characterized physiographic province and harbors the most diverse EPT assemblage with 212 species reported, the mountains with 163 species, and the plains with fifty-two species (Table 10). Fifty-four of these species were originally described from the SPRB. Presence of adult species across all three orders peaked in July and August.

This research highlighted 92 species; 17 mayflies, 19 stoneflies, and 56 caddisflies that require further investigation to better understand their status and distribution in the SPRB (Table 11). This list was compiled to demonstrate the lack of knowledge of regional freshwater resources and to encourage future aquatic ecologists to conduct systematic surveys to locate additional populations of these poorly understood but very important water quality indicating organisms.

Two mayflies, *Ephemerella apopsis* and *Macdunnoa persimplex*, and two stoneflies, *Isogenoides elongatus* and *Taenionema pacifica*, are possibly extirpated from the SPRB. Despite sampling effort at historical localities, no

additional specimens of these species have been reported for over 60 years. Only one species in the SPRB, the burrowing mayfly *Ephemera compar*, is considered extinct and with a vague type locality, it is unclear where to focus search efforts. The mayfly *Stenacron interpunctatum* is reported from the basin for the first time. The Arapahoe Snowfly, *Capnia arapahoe*, is on emergency petition for protection under the Federal Endangered Species Act. The Xerces Society is currently involved in locating additional populations near the type locality. *Mesocapnia frisoni* has perhaps the most peculiar distribution of all stoneflies in the basin. It is apparently restricted to a short stretch of the Little Thompson River on the plains of the foothills transition zone. *Arcynopteryx compacta* reaches its southern range limit in Colorado and apparently has a highly limited distribution in the SPRB. *Isoperla bilineata* was historically reported from the plains of Colorado and likely occurred in the South Platte River on the plains, but has not been reported since 1925. Susan's purse making caddisfly, *Ochrotrichia susanae*, is on emergency petition for protection under the Federal Endangered Species Act. Twenty-five other caddisfly species are known from the SPRB from just one record. Two caddisflies reported from the SPRB for the first time, *Glossosoma velonum* and *Limnephilus acnestus*, are known from the Western Slope of Colorado. They may have been transported into the basin by transmountain water diversions. With additional surveys in the SPRB more species will likely be added to this annotated inventory and the status and distribution of poorly known species will be better understood.

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Figures

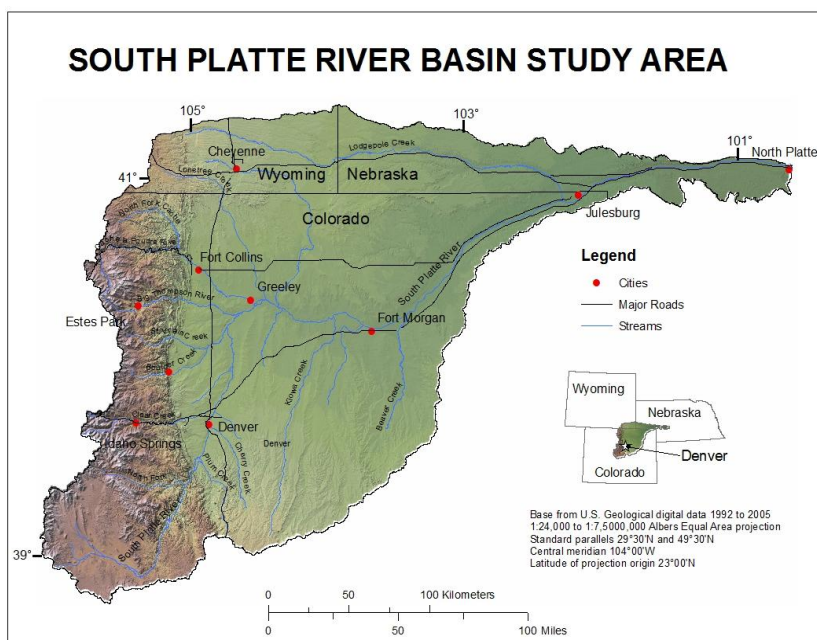


Figure 1. Map showing the South Platte River Basin study area.

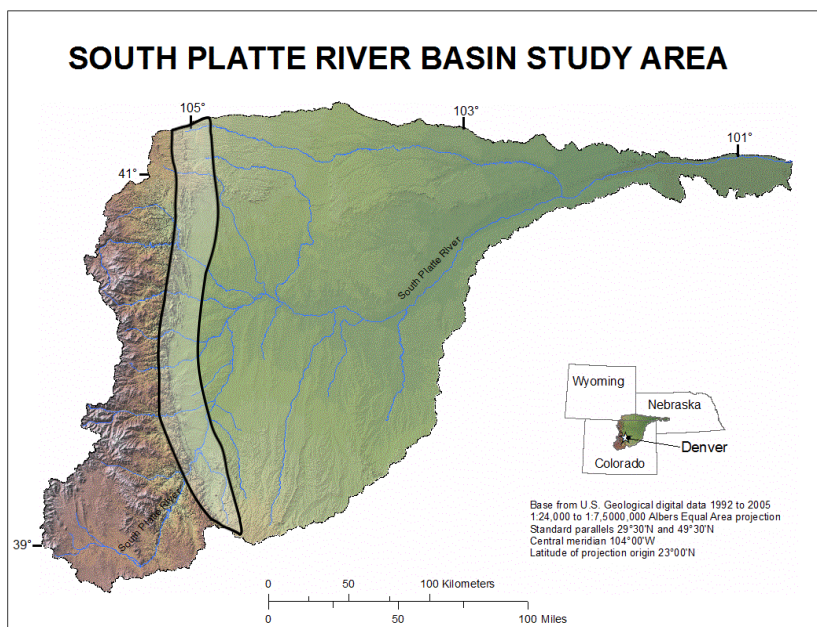


Figure 2. Map showing South Platte River Basin with foothills transition zone and Front Range Urban Corridor highlighted in white.

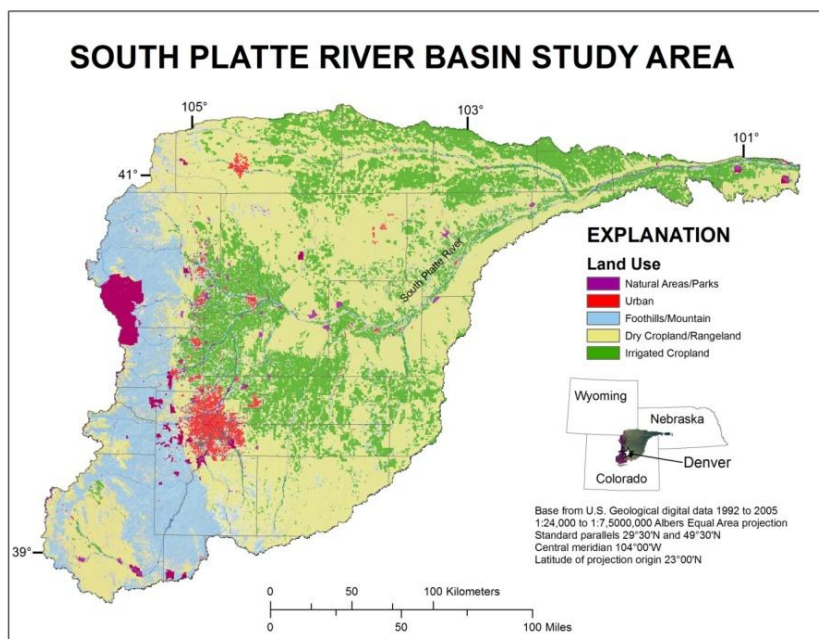


Figure 3. Land use and cover in the South Platte River Basin.

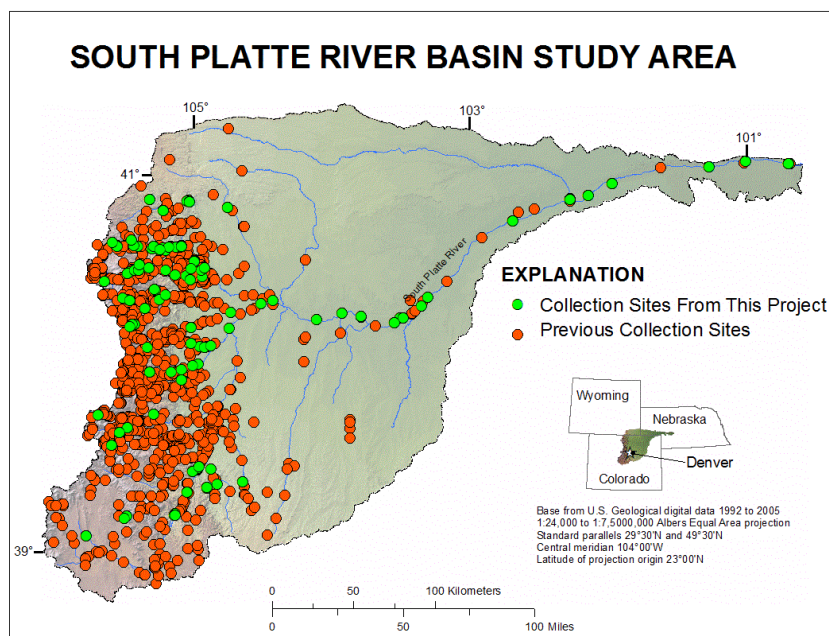


Figure 4. EPT collection sites in the South Platte River Basin. Recent field survey collection sites are represented by green dots and previous collection sites are represented by red dots.

Tables

Table 1. Mayfly species reported from the South Platte River Basin with number of records for each species.

Ameletidae		<i>Centroptilum bifurcatum</i> ⁴	2
<i>Ameletus celer</i> ¹	2	<i>Centroptilum conturbatum</i> ⁵	1
<i>Ameletus doddsianus</i>	8	<i>Dipheter hageni</i>	6
<i>Ameletus sparsatus</i>	7	<i>Fallceon quilleri</i>	95
<i>Ameletus subnotatus</i>	5	<i>Paracloeodes minutus</i>	13
<i>Ameletus validus</i>	4	<i>Plauditus punctiventris</i>	5
<i>Ameletus velox</i>	5	<i>Plauditus virilis</i> ⁶	2
Baetidae		<i>Pseudocloeon dardanum</i>	47
<i>Acentrella insignificans</i>	81	Caenidae	
<i>Acentrella turbida</i>	17	<i>Amercaenis ridens</i> ⁷	1
<i>Baetis bicaudatus</i>	9	<i>Caenis amica</i>	5
<i>Baetis flavistriga</i>	43	<i>Caenis bajaensis</i>	5
<i>Baetis magnus</i>	18	<i>Caenis latipennis</i>	7
<i>Baetis notos</i>	7	<i>Caenis punctata</i> ⁸	3
<i>Baetis tricaudatus</i>	79	<i>Caenis tardata</i> ⁹	2
<i>Callibaetis ferrugineus</i>	23	Ephemerellidae	
<i>hageni</i>		<i>Attenella margarita</i>	5
<i>Callibaetis fluctuans</i> ²	3	<i>Drunella coloradensis</i>	22
<i>Callibaetis pictus</i> ³	4	<i>Drunella doddsii</i>	24

¹ *Ameletus celer* both records are from high elevations.

² *Callibaetis fluctuans* widespread species but uncommon in SPRB.

³ *Callibaetis pictus* wide elevational range with no mid-foothills records.

⁴ *Centroptilum bifurcatum* the only SPRB records are from Fort Collins in 2001.

⁵ *Centroptilum conturbatum* one record from basin.

⁶ *Plauditus virilis* both records are from supply canals.

⁷ *Amercaenis ridens* one record from plains.

⁸ *Caenis punctata* reported from ponds and streams of foothills and plains.

⁹ *Caenis tardata* one record from plains and one from foothills transition zone.

Table 1 continued

<i>Drunella grandis</i>	58	<i>Maccaffertium mexicanum</i>	
<i>Ephemerella apopsis</i> ¹⁰	1	<i>integrum</i> ¹³	2
<i>Ephemerella dorothea</i>	21	<i>Macdunnoa persimplex</i> ¹⁴	2
<i>infrequens</i>		<i>Rhithrogena hageni</i>	14
<i>Ephemerella excrucians</i>	16	<i>Rhithrogena robusta</i>	7
<i>Ephemerella tibialis</i>	12	<i>Rhithrogena undulata</i> ¹⁵	1
<i>Serratella micheneri</i>	13	<i>Stenacron interpunctatum</i> ¹⁶	3
<i>Timpanoga hecuba hecuba</i>	18	Isonychiidae	
Ephemeridae		<i>Isonychia rufa</i>	13
<i>Ephemera compar</i> ¹¹	1	Leptohyphidae	
<i>Hexagenia limbata</i>	18	<i>Tricorythodes explicatus</i>	99
Heptageniidae		Leptophlebiidae	
<i>Cinygmula mimus</i>	5	<i>Choroterpes inornata</i>	9
<i>Cinygmula par</i>	6	<i>Leptophlebia cupida</i>	14
<i>Cinygmula ramaleyi</i>	10	<i>Paraleptophlebia debilis</i>	14
<i>Cinygmula tarda</i> ¹²	1	<i>Paraleptophlebia heteronea</i>	11
<i>Ecdyonurus criddlei</i>	29	<i>Paraleptophlebia memorialis</i>	5
<i>Ecdyonurus simplicioides</i>	11	<i>Paraleptophlebia</i>	
<i>Epeorus albertae</i>	16	<i>temporalis</i> ¹⁷	1
<i>Epeorus deceptivus</i>	8	Polymitarcyidae	
<i>Epeorus longimanus</i>	24	<i>Ephoron album</i>	12
<i>Heptagenia elegantula</i>	42	Siphonuridae	
<i>Heptagenia solitaria</i>	17	<i>Siphonurus occidentalis</i>	25

¹⁰ *Ephemerella apopsis* not recollected since type material in 1947 from SPRB.

¹¹ *Ephemera compar* is apparently endemic to SPRB in Colorado and considered extinct.

¹² *Cinygmula tarda* one record in SPRB and Colorado.

¹³ *Maccaffertium mexicanum integrum* both records are from the plains.

¹⁴ *Macdunnoa persimplex* not reported since 1935.

¹⁵ *Rhithrogena undulata* the record is from Fort Collins, identified from subimago.

¹⁶ *Stenacron interpunctatum* reported from the SPRB for the first time.

¹⁷ *Paraleptophlebia temporalis* one record from 1987.

Table 2. Approximate elevational distribution of mayfly species in the South Platte River Basin.
P = Plains, F = Foothills Transition Zone, M = Mountains.

Taxon	P	F	M
	865-1499	1500-2499	2500-3500
<i>Amercaenis ridens</i>			
<i>Maccaffertium mexicanum integrum</i>			
<i>Stenacron interpunctatum</i>			
<i>Caenis tardata</i>			
<i>Paracloeodes minutus</i>			
<i>Pseudocloeon dardanum</i>			
<i>Caenis amica</i>			
<i>Caenis latipennis</i>			
<i>Isonychia rufa</i>			
<i>Callibaetis fluctuans</i>			
<i>Ephoron album</i>			
<i>Tricorythodes explicatus</i>			
<i>Hexagenia limbata</i>			
<i>Acentrella insignificans</i>			
<i>Fallceon quilleri</i>			
<i>Heptagenia elegantula</i>			
<i>Ameletus doddsianus</i>			
<i>Baetis tricaudatus</i>			
<i>Callibaetis ferrugineus hageni</i>			
<i>Centroptilum bifurcatum</i>			
<i>Caenis punctata</i>			
<i>Ecdyonurus simplicioides</i>			
<i>Macdunnoa persimplex</i>			
<i>Rhithrogena undulata</i>			
<i>Baetis notos</i>			
<i>Plauditus virilis</i>			
<i>Caenis bajaensis</i>			
<i>Heptagenia solitaria</i>			
<i>Serratella micheneri</i>			
<i>Choroterpes inornata</i>			
<i>Paraleptophlebia memorialis</i>			
<i>Ameletus subnotatus</i>			
<i>Plauditus punctiventris</i>			
<i>Attenella margarita</i>			
<i>Paraleptophlebia heteronea</i>			

Taxon	P	F	M
	865-1499	1500-2499	2500-3500
<i>Baetis flavistriga</i>			
<i>Ephemerella excrucians</i>			
<i>Epeorus albertae</i>			
<i>Acentrella turbida</i>			
<i>Dipheter hageni</i>			
<i>Ecdyonurus criddlei</i>			
<i>Leptophlebia cupida</i>			
<i>Callibaetis pictus</i>			
<i>Baetis magnus</i>			
<i>Drunella grandis</i>			
<i>Ephemerella dorothea infrequens</i>			
<i>Timpanoga hecuba hecuba</i>			
<i>Paraleptophlebia debilis</i>			
<i>Drunella doddsii</i>			
<i>Siphonurus occidentalis</i>			
<i>Centroptilum conturbatum</i>			
<i>Ameletus sparsatus</i>			
<i>Ameletus validus</i>			
<i>Cinygmula mimus</i>			
<i>Ephemerella tibialis</i>			
<i>Ameletus velox</i>			
<i>Epeorus longimanus</i>			
<i>Rhithrogena robusta</i>			
<i>Drunella coloradensis</i>			
<i>Baetis bicaudatus</i>			
<i>Rhithrogena hageni</i>			
<i>Cinygmula ramaleyi</i>			
<i>Paraleptophlebia temporalis</i>			
<i>Epeorus deceptivus</i>			
<i>Ameletus celer</i>			
<i>Cinygmula tarda</i>			
<i>Cinygmula par</i>			
<i>Ephemerella apopsis</i>			

Table 3. Adult presence of mayfly species by month in the South Platte River Basin.

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Baetis tricaudatus</i>												
<i>Leptophlebia cupida</i>												
<i>Baetis magnus</i>												
<i>Tricorythodes explicates</i>												
<i>Callibaetis ferrugineus hageni</i>												
<i>Siphonurus occidentalis</i>												
<i>Paraleptophlebia memorialis</i>												
<i>Ameletus subnotatus</i>												
<i>Heptagenia solitaria</i>												
<i>Epeorus albertae</i>												
<i>Ameletus doddsianus</i>												
<i>Rhithrogena hageni</i>												
<i>Ephemerella dorothea infrequens</i>												
<i>Paraleptophlebia heteronea</i>												
<i>Cinygmula mimus</i>												
<i>Caenis amica</i>												
<i>Acentrella insignificans</i>												
<i>Caenis punctata</i>												
<i>Cinygmula ramaleyi</i>												
<i>Fallceon quilleri</i>												
<i>Pseudocloeon dardanum</i>												
<i>Ameletus sparsatus</i>												
<i>Paracloeodes minutus</i>												
<i>Ephemerella tibialis</i>												
<i>Ephemerella excrucians</i>												

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Hexagenia limbata</i>												
<i>Epeorus longimanus</i>												
<i>Ecdyonurus simplicioides</i>												
<i>Ecdyonurus criddlei</i>												
<i>Cinygmula par</i>												
<i>Serratella micheneri</i>												
<i>Ephoron album</i>												
<i>Callibaetis fluctuans</i>												
<i>Heptagenia elegantula</i>												
<i>Rhithrogena robusta</i>												
<i>Isonychia rufa</i>												
<i>Ephemerella apopsis</i>												
<i>Drunella grandis</i>												
<i>Caenis latipennis</i>												
<i>Ameletus velox</i>												
<i>Ameletus celer</i>												
<i>Macdunnoa persimplex</i>												
<i>Stenacron interpunctatum</i>												
<i>Paraleptophlebia debilis</i>												
<i>Epeorus deceptivus</i>												
<i>Drunella coloradensis</i>												
<i>Timpanoga hecuba hecuba</i>												
<i>Paraleptophlebia temporalis</i>												
<i>Dipheter hageni</i>												
<i>Cinygmula tarda</i>												
<i>Rhithrogena undulata</i>												
<i>Choroterpes inornata</i>												
<i>Ameletus validus</i>												

Table 3 continued

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Acentrella turbida</i> *												
<i>Baetis bicaudatus</i> *												
<i>Baetis flavistriga</i> *												
<i>Baetis notos</i> *												
<i>Callibaetis pictus</i> *												
<i>Centroptilum bifurcatum</i> *												
<i>Centroptilum conturbatum</i> *												
<i>Plauditis punctiventris</i> *												

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Amercaenis ridens</i> *												
<i>Caenis bajaensis</i> *												
<i>Caenis tardata</i> *												
<i>Attenella margarita</i> *												
<i>Drunella doddsii</i> *												
<i>Plauditis virilis</i> *												
<i>Ephemera compar</i> *												

* Species with no adults reported or adult data not available for this study.

Table 4. Stonefly species reported from the South Platte River Basin with number of records for each species.

Capniidae		<i>Sweltsa borealis</i>	17
<i>Capnia arapahoe</i> ¹⁸	5	<i>Sweltsa coloradensis</i>	24
<i>Capnia coloradensis</i>	19	<i>Sweltsa fidelis</i> ²⁵	1
<i>Capnia confusa</i>	39	<i>Sweltsa lamba</i>	63
<i>Capnia decepta</i>	28	<i>Triznaka pintada</i>	15
<i>Capnia gracilaria</i>	34	<i>Triznaka signata</i>	29
<i>Capnia vernalis</i> ¹⁹	3	Leuctridae	
<i>Capnura wanica</i>	38	<i>Paraleuctra</i>	2
<i>Eucapnopsis</i>	22	<i>occidentalis</i> ²⁶	
<i>brevicauda</i>		<i>Paraleuctra projecta</i>	8
<i>Isocapnia hyalita</i> ²⁰	1	<i>Paraleuctra vershina</i>	34
<i>Mesocapnia frisoni</i> ²¹	15	<i>Perlomyia utahensis</i> ²⁷	2
<i>Paracapnia angulata</i> ²²	3	Nemouridae	
<i>Utacapnia logana</i>	12	<i>Amphinemura banksi</i>	32
Chloroperlidae		<i>Malenka californica</i>	27
<i>Alloperla pilosa</i>	7	<i>Malenka coloradensis</i>	14
<i>Alloperla thalia</i> ²³	1	<i>Malenka flexura</i>	15
<i>Paraperla frontalis</i>	20	<i>Podmosta decepta</i>	6
<i>Plumiperla diversa</i>	12	<i>Podmosta delicatula</i>	24
<i>Suwallia pallidula</i>	23	<i>Prostoia besametsa</i>	51
<i>Suwallia starki</i>	6	<i>Zapada cinctipes</i>	56
<i>Suwallia wardi</i> ²⁴	2	<i>Zapada frigida</i>	4

¹⁸ *Capnia arapahoe* endemic to the SPRB. Collected in March and April 2009 for the first time since the original type material in 1986 and 1987.

¹⁹ *Capnia vernalis* 3 records from South Platte River in 1943, 1986, and 2009.

²⁰ *Isocapnia hyalita* one high elevation record.

²¹ *Mesocapnia frisoni* known from one location in SPRB.

²² *Paracapnia angulata* records from Cache la Poudre River and a small tributary.

²³ *Alloperla thalia* known from one record in SPRB.

²⁴ *Suwallia wardi* known from one record in SPRB.

²⁵ *Sweltsa fidelis* known from one record in SPRB.

²⁶ *Paraleuctra occidentalis* uncommonly collected in SPRB.

²⁷ *Perlomyia utahensis* uncommonly collected in SPRB.

Table 4 continued

<i>Zapada haysi</i>	10	<i>Isoperla pinta</i>	11
<i>Zapada oregonensis</i>	16	<i>Isoperla</i>	29
Perlidae		<i>quinquepunctata</i>	
<i>Claassenia sabulosa</i>	54	<i>Isoperla sobria</i>	14
<i>Hesperoperla pacifica</i>	38	<i>Kogotus modesta</i>	27
<i>Perlesta decipiens</i>	35	<i>Megarcys signata</i>	26
Perlodidae		<i>Pictetiella expansa</i>	5
<i>Arcynopteryx</i>	5	<i>Skwala americana</i>	42
<i>compacta</i> ²⁸		Pteronarcyidae	
<i>Cultus aestivalis</i> ²⁹	9	<i>Pteronarcella badia</i>	39
<i>Diura knowltoni</i>	11	<i>Pteronarcys californica</i>	16
<i>Isogenoides</i>	2	<i>Pteronarcys pictetii</i>	12
<i>elongatus</i> ³⁰		Taeniopterygidae	
<i>Isoperla bilineata</i> ³¹	?	<i>Doddsia occidentalis</i>	6
<i>Isoperla fulva</i>	40	<i>Taenionema pacifica</i> ³⁴	3
<i>Isoperla marlynia</i> ³²	3	<i>Taenionema pallidum</i>	22
<i>Isoperla mormona</i> ³³	3	<i>Taeniopteryx burksi</i> ³⁵	1
<i>Isoperla petersoni</i>	5		

²⁸ *Arcynopteryx compacta* known from 2 locations in Boulder County.

²⁹ *Cultus aestivalis* known only from the Cache la Poudre River drainage in Larimer County.

³⁰ *Isogenoides elongatus* last reported from SPRB in 1889.

³¹ *Isoperla bilineata* reported from plains Colorado but location and specimen not verified.

³² *Isoperla marlynia* records are from far eastern portion of SPRB on plains.

³³ *Isoperla mormona* known from upper elevations in northern and southern portions.

³⁴ *Taenionema pacifica* last reported in 1907.

³⁵ *Taeniopteryx burksi* known only from Nebraska portion of SPRB.

Table 5. Approximate elevational distribution of stonefly species in the South Platte River Basin.
P = Plains, F = Foothills Transition Zone, M = Mountains.

Taxon	P	F	M
	865- 1499	1500- 2499	2500- 3500
<i>Isoperla marlynia</i>			
<i>Pteronarcys pictetii</i>			
<i>Taeniopteryx burksi</i>			
<i>Perlesta decipiens</i>			
<i>Isoperla quinquepunctata</i>			
<i>Capnura wanica</i>			
<i>Capnia confusa</i>			
<i>Mesocapnia frisoni</i>			
<i>Cultus aestivalis</i>			
<i>Isogenoides elongatus</i>			
<i>Taenionema pacifica</i>			
<i>Capnia vernalis</i>			
<i>Paracapnia angulata</i>			
<i>Pteronarcys californica</i>			
<i>Malenka californica</i>			
<i>Hesperoperla pacifica</i>			
<i>Diura knowltoni</i>			
<i>Skwala americana</i>			
<i>Pteronarcella badia</i>			
<i>Eucapnopsis brevicauda</i>			
<i>Triznaka pintada</i>			
<i>Triznaka signata</i>			
<i>Claassenia sabulosa</i>			
<i>Sweltsa coloradensis</i>			
<i>Paraperla frontalis</i>			
<i>Paraleuctra vershina</i>			
<i>Zapada haysi</i>			
<i>Zapada oregonensis</i>			
<i>Capnia decepta</i>			
<i>Prostoia besametsa</i>			
<i>Isoperla fulva</i>			
<i>Capnia arapahoe</i>			

Taxon	P	F	M
	865- 1499	1500- 2500	2500- 3500
<i>Utacapnia logana</i>			
<i>Capnia gracilaria</i>			
<i>Isoperla pinta</i>			
<i>Zapada cinctipes</i>			
<i>Suwallia pallidula</i>			
<i>Sweltsa lamba</i>			
<i>Amphinemura banksi</i>			
<i>Alloperla thalia</i>			
<i>Capnia coloradensis</i>			
<i>Podmosta delicatula</i>			
<i>Taenionema pallidum</i>			
<i>Suwallia starki</i>			
<i>Suwallia wardi</i>			
<i>Isoperla mormona</i>			
<i>Isoperla sobria</i>			
<i>Doddsia occidentalis</i>			
<i>Kogotus modesta</i>			
<i>Megarcys signata</i>			
<i>Isocapnia hyalita</i>			
<i>Malenka coloradensis</i>			
<i>Paraleuctra projecta</i>			
<i>Podmosta decepta</i>			
<i>Pictetiella expansa</i>			
<i>Alloperla pilosa</i>			
<i>Plumiperla diversa</i>			
<i>Sweltsa borealis</i>			
<i>Paraleuctra occidentalis</i>			
<i>Malenka flexura</i>			
<i>Isoperla petersoni</i>			
<i>Perlomyia utahensis</i>			
<i>Sweltsa fidelis</i>			
<i>Zapada frigida</i>			
<i>Arcynopteryx compacta</i>			

Table 6. Adult presence of stonefly species by month in the South Platte River Basin.

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Capnia decepta</i>												
<i>Capnura wanica</i>												
<i>Mesocapnia frisoni</i>												
<i>Capnia confusa</i>												
<i>Capnia vernalis</i>												
<i>Isoperla quinquepunctata</i>												
<i>Capnia gracilaria</i>												
<i>Zapada cinctipes</i>												
<i>Isogenoides elongatus</i>												
<i>Capnia coloradensis</i>												
<i>Paracapnia angulata</i>												
<i>Capnia arapahoe</i>												
<i>Taeniopteryx burksi</i>												
<i>Taenionema pacifica</i>												
<i>Isoperla marlynia</i>												
<i>Triznaka pintada</i>												
<i>Prostoia besametsa</i>												
<i>Pteronarcella badia</i>												
<i>Pteronarcys pictetii</i>												
<i>Triznaka signata</i>												
<i>Isoperla pinta</i>												
<i>Zapada haysi</i>												
<i>Zapada oregonensis</i>												
<i>Podmosta delicatula</i>												
<i>Zapada haysi</i>												
<i>Megarcys signata</i>												
<i>Paraleuctra vershina</i>												
<i>Doddsia occidentalis</i>												
<i>Taenionema pallidum</i>												
<i>Pteronarcys californica</i>												
<i>Hesperoperla pacifica</i>												

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Cultus aestivalis</i>												
<i>Eucapnopsis brevicauda</i>												
<i>Isocapnia hyalita</i>												
<i>Sweltsa lamba</i>												
<i>Sweltsa borealis</i>												
<i>Sweltsa coloradensis</i>												
<i>Perlesta decipiens</i>												
<i>Isoperla fulva</i>												
<i>Isoperla sobria</i>												
<i>Claassenia sabulosa</i>												
<i>Zapada frigida</i>												
<i>Podmosta decepta</i>												
<i>Malenka flexura</i>												
<i>Alloperla pilosa</i>												
<i>Suwallia wardi</i>												
<i>Paraleuctra projecta</i>												
<i>Paraleuctra occidentalis</i>												
<i>Pictetiella expansa</i>												
<i>Malenka californica</i>												
<i>Isoperla pinta</i>												
<i>Amphinemura banksi</i>												
<i>Suwallia pallidula</i>												
<i>Plumiperla diversa</i>												
<i>Paraperla frontalis</i>												
<i>Malenka coloradensis</i>												
<i>Isoperla mormona</i>												
<i>Arcynopteryx compacta</i>												
<i>Sweltsa fidelis</i>												
<i>Perlomyia utahensis</i>												
<i>Alloperla thalia</i>												
<i>Kogotus modesta</i>												
<i>Isoperla petersoni</i>												
<i>Diura knowltoni</i>												
<i>Suwallia starki</i>												

Table 7. Caddisfly species reported from the South Platte River Basin with number of records for each species.

Apataniidae		Helicopsychidae	
<i>Allomyia chama</i> ³⁶	1	<i>Helicopsyche borealis</i>	38
<i>Allomyia gnathos</i>	6	<i>Helicopsyche</i> new species ⁴²	1
<i>Allomyia tripunctata</i> ³⁷	3	Hydropsychidae	
<i>Apatania zonella</i> ³⁸	3	<i>Arctopsyche grandis</i>	68
Brachycentridae		<i>Cheumatopsyche analis</i>	62
<i>Brachycentrus americanus</i>	105	<i>Cheumatopsyche campyla</i> ⁴³	5
<i>Brachycentrus occidentalis</i>	22	<i>Cheumatopsyche gracilis</i>	6
<i>Micrasema bactro</i> ³⁹	2	<i>Cheumatopsyche lasia</i> ⁴⁴	2
Glossosomatidae		<i>Hydropsyche bronta</i>	17
<i>Agapetus boulderensis</i>	42	<i>Hydropsyche cockerelli</i>	49
<i>Anagapetus debilis</i>	9	<i>Hydropsyche incommoda</i>	6
<i>Culoptila thoracica</i>	12	<i>Hydropsyche morosa</i> ⁴⁵	2
<i>Glossosoma alascense</i> ⁴⁰	1	<i>Hydropsyche occidentalis</i>	137
<i>Glossosoma parvulum</i>	44	<i>Hydropsyche osleri</i>	83
<i>Glossosoma velonum</i> ⁴¹	1	<i>Hydropsyche simulans</i>	38
<i>Glossosoma ventrale</i>	13		
<i>Glossosoma verdonum</i>	28		
<i>Protoptila coloma</i>	5		

³⁶ *Allomyia chama* record is from a high elevation stream.

³⁷ *Allomyia tripunctata* records from large and small intermittent streams.

³⁸ *Apatania zonella* records are from high elevation lakes.

³⁹ *Micrasema bactro* known from two records from Larimer County.

⁴⁰ *Glossosoma alascense* known from single female specimen in poor condition.

⁴¹ *Glossosoma velonum* one record at the end of the CBT transmountain water diversion.

⁴² *Helicopsyche* new species currently being described.

⁴³ *Cheumatopsyche campyla* reported from SPRB for the first time.

⁴⁴ *Cheumatopsyche lasia* known from 2 recent records on the plains.

⁴⁵ *Hydropsyche morosa* known from two records in 1905 and 1986.

Table 7 continued

<i>Parapsyche almota</i> ⁴⁶	2	<i>Ochrotrichia susanae</i> ⁵⁰	3
<i>Potamyia flava</i>	4	<i>Orthotrichia</i>	
<i>Smicridea signata</i> ⁴⁷	1	<i>aegerfasciella</i> ⁵¹	2
Hydroptilidae		<i>Orthotrichia cristata</i> ⁵²	1
<i>Agraylea multipunctata</i>	24	<i>Oxyethira dualis</i> ⁵³	1
<i>Agraylea saltesea</i>	5	<i>Oxyethira pallida</i> ⁵⁴	2
<i>Hydroptila ajax</i>	15	<i>Oxyethira serrata</i> ⁵⁵	1
<i>Hydroptila arctia</i>	14	<i>Stactobiella delira</i> ⁵⁶	2
<i>Hydroptila argosa</i>	5	Lepidostomatidae	
<i>Hydroptila consimilis</i>	8	<i>Lepidostoma</i>	
<i>Hydroptila pecos</i>	19	<i>cascadense</i>	20
<i>Hydroptila rono</i>	4	<i>Lepidostoma</i>	
<i>Hydroptila</i>		<i>cinereum</i> ⁵⁷	1
<i>waubesiana</i> ⁴⁸	1	<i>Lepidostoma ormeum</i>	12
<i>Hydroptila xera</i> ⁴⁹	3	<i>Lepidostoma pluviale</i>	39
<i>Leucotrichia pictipes</i>	17	<i>Lepidostoma roafi</i>	8
<i>Ochrotrichia logana</i>	6	<i>Lepidostoma stigma</i> ⁵⁸	1
<i>Ochrotrichia stylata</i>	13	<i>Lepidostoma unicolor</i>	8

⁴⁶ *Parapsyche almota* both records from upper elevations in 1981 and 1982.

⁴⁷ *Smicridea signata* not reported since 1903.

⁴⁸ *Hydroptila waubesiana* reported from Colorado and the SPRB for the first time.

⁴⁹ *Hydroptila xera* not reported since 1989.

⁵⁰ *Ochrotrichia susanae* three populations known in the world, two of those are in Colorado with one in SPRB. Currently on emergency petition for Federal Endangered Species Act.

⁵¹ *Orthotricha aegerfasciella* known from Mail Creek in Fort Collins.

⁵² *Orthotricha cristata* reported from Colorado and SPRB for the first time.

⁵³ *Oxyethira dualis* one record from a high elevation lake.

⁵⁴ *Oxyethira pallida* collected from Fort Collins.

⁵⁵ *Oxyethira serrata* reported from SPRB for the first time.

⁵⁶ *Stactobiella delira* one record from 1990.

⁵⁷ *Lepidostoma cinereum* one record from foothills.

⁵⁸ *Lepidostoma stigma* not reported in basin since original description from Boulder in 1907.

Table 7 continued

Leptoceridae

<i>Ceraclea maculata</i> ⁵⁹	3
<i>Ceraclea tarsipunctata</i> ⁶⁰	1
<i>Leptocerus</i>	
<i>americanus</i> ⁶¹	2
<i>Mystacides interjectus</i>	9
<i>Nectopsyche candida</i> ⁶²	2
<i>Nectopsyche diarina</i>	10
<i>Nectopsyche gracilis</i> ⁶³	1
<i>Nectopsyche</i>	
<i>lahontanensis</i> ⁶⁴	1
<i>Nectopsyche stigmatica</i>	12
<i>Oecetis avara</i>	22
<i>Oecetis cinerascens</i> ⁶⁵	2
<i>Oecetis disjuncta</i>	38
<i>Oecetis inconspicua</i>	35
<i>Oecetis ochracea</i> ⁶⁶	2
<i>Triaenodes frontalis</i>	9
<i>Triaenodes reuteri</i>	10
<i>Triaenodes tardus</i>	22

Limnephilidae

<i>Amphicosmoecus</i>	
<i>canax</i>	8
<i>Anabolia bimaculata</i>	18
<i>Anabolia consocia</i> ⁶⁷	1
<i>Asynarchus circopa</i> ⁶⁸	1
<i>Asynarchus nigriculus</i>	45
<i>Chyranda centralis</i>	15
<i>Clistoronia maculata</i>	6
<i>Dicosmoecus atripes</i>	26
<i>Ecclisomyia conspersa</i>	4
<i>Ecclisomyia maculosa</i>	12
<i>Glyphopsyche irrorata</i>	11
<i>Grammotaulius</i>	
<i>lorettae</i> ⁶⁹	1
<i>Hesperophylax</i>	3
<i>consimilis</i> ⁷⁰	
<i>Hesperophylax</i>	
<i>designatus</i>	52
<i>Hesperophylax magnus</i>	8
<i>Hesperophylax</i>	
<i>occidentalis</i>	44
<i>Homophylax flavipennis</i>	5

⁵⁹ *Ceraclea maculata* one historic and two recent records from wide elevational distribution.

⁶⁰ *Ceraclea tarsipunctata* reported from SPRB for the first time.

⁶¹ *Leptocerus americanus* reported from Colorado and SPRB for the first time.

⁶² *Nectopsyche candida* known from two records on the plains.

⁶³ *Nectopsyche gracilis* one record from Fort Collins in 2000.

⁶⁴ *Nectopsyche lahontanensis* one record from Fort Collins in 1988.

⁶⁵ *Oecetis cinerascens* reported from SPRB for the first time.

⁶⁶ *Oecetis ochracea* two records from 1930 and 1986.

⁶⁷ *Anabolia consocia* one record on the plains.

⁶⁸ *Asynarchus circopa* reported from Colorado and SPRB for the first time.

⁶⁹ *Grammotaulius lorettiae* one record near Cameron Pass, not confirmed if collected in SPRB.

⁷⁰ *Hesperophylax consimilis* described in SPRB, only two other records were available.

Table 7 continued

<i>Lenarchus</i>		<i>Limnephilus rohweri</i>	7
<i>brevipennis</i> ⁷¹	2	<i>Limnephilus sansoni</i> ⁷⁶	2
<i>Lenarchus fautini</i> ⁷²	1	<i>Limnephilus</i>	
<i>Limnephilus abbreviatus</i>	50	<i>secludens</i> ⁷⁷	2
<i>Limnephilus acnestus</i> ⁷³	1	<i>Limnephilus spinatus</i>	8
<i>Limnephilus apache</i>	6	<i>Limnephilus</i>	
<i>Limnephilus castor</i>	9	<i>sublunatus</i> ⁷⁸	3
<i>Limnephilus</i>		<i>Limnephilus taloga</i> ⁷⁹	4
<i>coloradensis</i>	25	<i>Limnephilus tarsalis</i> ⁸⁰	3
<i>Limnephilus dispar</i> ⁷⁴	2	<i>Nemotaulius hostilis</i>	12
<i>Limnephilus diversus</i>	35	<i>Onocosmoecus unicolor</i>	32
<i>Limnephilus externus</i>	17	<i>Philarctus quaeris</i>	5
<i>Limnephilus frijole</i>	14	<i>Psychoglypha ormiae</i> ⁸¹	4
<i>Limnephilus hyalinus</i>	5	<i>Psychoglypha</i>	
<i>Limnephilus indivisus</i>	9	<i>subborealis</i>	20
<i>Limnephilus janus</i>	7	<i>Psychoronia costalis</i>	42
<i>Limnephilus labus</i> ⁷⁵	3	<i>Pycnopsyche</i>	
<i>Limnephilus lithus</i>	17	<i>subfasciata</i> ⁸²	1
<i>Limnephilus moestus</i>	13	Molannidae	
<i>Limnephilus perpusillus</i>	10	<i>Molanna flavicornis</i>	20
<i>Limnephilus picturatus</i>	32	Philopotamidae	
		<i>Chimarra utahensis</i>	9

⁷¹ *Lenarchus brevipennis* two historic records from 1925 and 1980.

⁷² *Lenarchus fautini* one record from a high elevation lake in 1995.

⁷³ *Limnephilus acnestus* one record from Denver.

⁷⁴ *Limnephilus dispar* two records from a high elevation lake.

⁷⁵ *Limnephilus labus* described from SPRB but known from only three records.

⁷⁶ *Limnephilus sansoni* described in SPRB, possibly occurs in higher elevation streams.

⁷⁷ *Limnephilus secludens* two records from 1935 and 1995.

⁷⁸ *Limnephilus sublunatus* one historic and two recent records.

⁷⁹ *Limnephilus taloga* three records from northern locations.

⁸⁰ *Limnephilus tarsalis* two records from 1938 and 1995.

⁸¹ *Psychoglypha ormiae* four widespread, high elevations records.

⁸² *Pycnopsyche subfasciata* one record from Fort Collins in 1974.

Table 7 continued

<i>Dolophilodes aequalis</i>	17	<i>Rhyacophila angelita</i>	40
<i>Wormaldia gabriella</i>	5	<i>Rhyacophila bifila</i> ⁸⁸	2
Phryganeidae		<i>Rhyacophila brunnea</i>	22
<i>Agrypnia colorata</i> ⁸³	2	<i>Rhyacophila</i>	
<i>Agrypnia deflate</i>	5	<i>coloradensis</i>	98
<i>Agrypnia glacialis</i>	4	<i>Rhyacophila harmstoni</i>	5
<i>Agrypnia straminea</i> ⁸⁴	1	<i>Rhyacophila hyalinata</i>	9
<i>Phryganea cinerea</i>	11	<i>Rhyacophila pellisa</i>	34
Polycentropodidae		<i>Rhyacophila vao</i> ⁸⁹	3
<i>Cynellus fraternus</i> ⁸⁵	1	<i>Rhyacophila verrula</i>	20
<i>Polycentropus</i>		<i>Rhyacophila vofixa</i> ⁹⁰	1
<i>aureolus</i> ⁸⁶	1	Uenoidae	
<i>Polycentropus cinereus</i>	5	<i>Neophylax splendens</i>	8
<i>Polycentropus</i>		<i>Neothremma alicia</i>	7
<i>interruptus</i> ⁸⁷	2	<i>Oligophlebodes ardis</i> ⁹¹	2
Psychomyiidae		<i>Oligophlebodes minutus</i>	29
<i>Psychomyia flavida</i>	60		
Rhyacophilidae			
<i>Rhyacophila alberta</i>	18		

⁸³ *Agrypnia colorata* two records from Fort Collins in 1974.

⁸⁴ *Agrypnia straminea* one record from a high elevation lake in 1983.

⁸⁵ *Cynellus fraternus* reported from SPRB for the first time.

⁸⁶ *Polycentropus aureolus* southern range limit is in SPRB.

⁸⁷ *Polycentropus interruptus* not reported since 1944.

⁸⁸ *Rhyacophila bifila* reported from Cache la Poudre River in 1995 and 1996.

⁸⁹ *Rhyacophila vao* three records in northern portion of SPRB.

⁹⁰ *Rhyacophila vofixa* reported from SPRB for the first time.

⁹¹ *Oligophlebodes ardis* known from one recent record since 1938.

Table 8. Approximate elevational distribution of caddisfly species in the South Platte River Basin.
P = Plains, F = Foothills Transition Zone, M = Mountains.

Taxon	P	F	M
	865-1499	1500-2499	2500-3500
<i>Nectopsyche candida</i>			
<i>Cynellus fraternus</i>			
<i>Cheumatopsyche lasia</i>			
<i>Cheumatopsyche campyla</i>			
<i>Potamyia flava</i>			
<i>Leptocerus americanus</i>			
<i>Hydroptila waubesiana</i>			
<i>Hydropsyche incommoda</i>			
<i>Nectopsyche diarina</i>			
<i>Hydroptila pecos</i>			
<i>Oecetis cinerascens</i>			
<i>Trienodes reuteri</i>			
<i>Hydroptila ajax</i>			
<i>Ceraclea maculata</i>			
<i>Nectopsyche stigmatica</i>			
<i>Ochrotrichia stylata</i>			
<i>Hydropsyche simulans</i>			
<i>Cheumatopsyche analis</i>			
<i>Oecetis inconspicua</i>			
<i>Nectopsyche gracilis</i>			
<i>Hydropsyche bronta</i>			
<i>Agraylea multipunctata</i>			
<i>Hydropsyche occidentalis</i>			
<i>Limnephilus diversus</i>			
<i>Brachycentrus americanus</i>			
<i>Hydropsyche osleri</i>			
<i>Ceraclea tarsipunctata</i>			
<i>Smicridea signata</i>			
<i>Orthotrichia cristata</i>			
<i>Hydroptila argosa</i>			
<i>Orthotrichia aegerfasciella</i>			
<i>Polycentropus cinereus</i>			

Taxon	P	F	M
	865-1499	1500-2499	2500-3500
<i>Oxyethira pallida</i>			
<i>Nectopsyche lahontanensis</i>			
<i>Pycnopsyche subfasciata</i>			
<i>Cheumatopsyche gracilis</i>			
<i>Hydroptila consimilis</i>			
<i>Stactobiella delira</i>			
<i>Lepidostoma stigma</i>			
<i>Hydropsyche morosa</i>			
<i>Limnephilus acnestus</i>			
<i>Glossosoma velonum</i>			
<i>Anabolia consocia</i>			
<i>Oecetis ochracea</i>			
<i>Polycentropus interruptus</i>			
<i>Oecetis avara</i>			
<i>Limnephilus frijole</i>			
<i>Agrypnia colorata</i>			
<i>Chimarra utahensis</i>			
<i>Protophila Coloma</i>			
<i>Trienodes tarda</i>			
<i>Leucotrichia pictipes</i>			
<i>Limnephilus lithus</i>			
<i>Rhyacophila bifila</i>			
<i>Lepidostoma ormeum</i>			
<i>Hesperophylax magnus</i>			
<i>Glossosoma ventrale</i>			
<i>Hydroptila arctia</i>			
<i>Ochrotrichia logana</i>			
<i>Limnephilus apache</i>			
<i>Lepidostoma unicolor</i>			
<i>Agraylea saltsea</i>			
<i>Clistronia maculata</i>			
<i>Psychomyia flavida</i>			
<i>Agapetus boulderensis</i>			
<i>Oecetis disjuncta</i>			
<i>Limnephilus secludens</i>			
<i>Lepidostoma pluvial</i>			
<i>Neophylax splendens</i>			
<i>Brachycentrus occidentalis</i>			

Table 8 continued.

Taxon	P	F	M
	865-1499	1500-2499	2500-3500
<i>Glossosoma parvulum</i>			
<i>Hydropsyche cockerelli</i>			
<i>Arctopsyche grandis</i>			
<i>Helicopsyche borealis</i>			
<i>Phryganea cinerea</i>			
<i>Limnephilus hyalinus</i>			
<i>Rhyacophila coloradensis</i>			
<i>Rhyacophila verrula</i>			
<i>Dolophilodes aequalis</i>			
<i>Culoptila thoracica</i>			
<i>Mystacides interjectus</i>			
<i>Hesperophylax occidentalis</i>			
<i>Hesperophylax designatus</i>			
<i>Psychoglypha subborealis</i>			
<i>Onocosmoecus unicolor</i>			
<i>Dicosmoecus atripes</i>			
<i>Helicopsyche new species</i>			
<i>Parapsyche almota</i>			
<i>Limnephilus taloga</i>			
<i>Wormaldia gabriella</i>			
<i>Triaenodes frontalis</i>			
<i>Limnephilus castor</i>			
<i>Homophylax flavipennis</i>			
<i>Agrypnia deflata</i>			
<i>Rhyacophila angelita</i>			
<i>Anagapetus debilis</i>			
<i>Limnephilus abbreviatus</i>			
<i>Anabolia bimaculata</i>			
<i>Micrasema bactro</i>			
<i>Rhyacophila vao</i>			
<i>Limnephilus tarsalis</i>			
<i>Limnephilus spinatus</i>			
<i>Hydroptila rono</i>			
<i>Chyranda centralis</i>			
<i>Limnephilus externus</i>			
<i>Agrypnia glacialis</i>			
<i>Lepidostoma cascadenense</i>			
<i>Neothremma alicia</i>			

Taxon	P	F	M
	865-1499	1500-2499	2500-3500
<i>Amphicosmoecus canax</i>			
<i>Oligophlebodes minutus</i>			
<i>Rhyacophila pellisa</i>			
<i>Glossosoma verdonum</i>			
<i>Hydroptila xera</i>			
<i>Limnephilus indivisus</i>			
<i>Rhyacophila brunnea</i>			
<i>Rhyacophila alberta</i>			
<i>Psychoronia costalis</i>			
<i>Nemotaulius hostilis</i>			
<i>Asynarchus nigriculus</i>			
<i>Allomyia tripunctata</i>			
<i>Lepidostoma cinereum</i>			
<i>Hesperophylax consimilis</i>			
<i>Limnephilus sublunatus</i>			
<i>Rhyacophila hyalinata</i>			
<i>Molanna flavicornis</i>			
<i>Philarctus quaeris</i>			
<i>Limnephilus moestus</i>			
<i>Glyphopsyche irrorata</i>			
<i>Limnephilus janus</i>			
<i>Ecclisomyia maculosa</i>			
<i>Limnephilus coloradensis</i>			
<i>Psychoglypha ormieae</i>			
<i>Limnephilus labus</i>			
<i>Limnephilus picturatus</i>			
<i>Lepidostoma roafi</i>			
<i>Glossosoma alascense</i>			
<i>Grammotaulius lorettae</i>			
<i>Polycentropus aureola</i>			
<i>Lenarchus fautini</i>			
<i>Ochrotrichia susanae</i>			
<i>Asynarchus circopa</i>			
<i>Lenarchus brevipennis</i>			
<i>Limnephilus sansoni</i>			
<i>Oxyethira dualis</i>			
<i>Limnephilus dispar</i>			
<i>Agrypnia straminea</i>			
<i>Rhyacophila vofixa</i>			
<i>Allomyia gnathos</i>			
<i>Allomyia chama</i>			

Table 9. Adult presence of caddisfly species by month in the South Platte River Basin.

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Onocosmoecus unicolor</i>												
<i>Psychoglypha subborealis</i>												
<i>Hesperophylax designatus</i>												
<i>Arctopsyche grandis</i>												
<i>Dolophilodes aequalis</i>												
<i>Rhyacophila coloradensis</i>												
<i>Amphicosmoecus canax</i>												
<i>Psychoronia costalis</i>												
<i>Hydropsyche oslari</i>												
<i>Hydropsyche occidentalis</i>												
<i>Glyphopsyche irrorata</i>												
<i>Agraylea multipunctata</i>												
<i>Limnephilus moestus</i>												
<i>Cheumatopsyche analis</i>												
<i>Allomyia tripunctata</i>												
<i>Limnephilus rohweri</i>												
<i>Brachycentrus occidentalis</i>												
<i>Hesperophylax occidentalis</i>												
<i>Psychoglypha ormiae</i>												
<i>Limnephilus lithus</i>												
<i>Limnephilus diversus</i>												
<i>Limnephilus abbreviatus</i>												
<i>Anabolia bimaculata</i>												
<i>Psychomyia flavida</i>												
<i>Glossosoma verdonum</i>												

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Trienodes tardus</i>												
<i>Ecclisomyia conspersa</i>												
<i>Nectopsyche gracilis</i>												
<i>Limnephilus taloga</i>												
<i>Rhyacophila angelita</i>												
<i>Rhyacophila pellisa</i>												
<i>Limnephilus frijole</i>												
<i>Hesperophylax magnus</i>												
<i>Ochrotrichia stylata</i>												
<i>Brachycentrus americanus</i>												
<i>Hydropsyche bronta</i>												
<i>Polycentropus cinereus</i>												
<i>Oecetis avara</i>												
<i>Ochrotrichia logana</i>												
<i>Nectopsyche stigmatica</i>												
<i>Limnephilus apache</i>												
<i>Lepidostoma pluviale</i>												
<i>Lepidostoma cascadenae</i>												
<i>Hydroptila ajax</i>												
<i>Hydropsyche cockerelli</i>												
<i>Glossosoma parvulum</i>												
<i>Ecclisomyia maculosa</i>												
<i>Trienodes reuteri</i>												
<i>Rhyacophila brunnea</i>												
<i>Oecetis inconspicua</i>												

Table 9 continued.

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Oecetis disjuncta</i>												
<i>Limnephilus castor</i>												
<i>Hydropsyche simulans</i>												
<i>Helicopsyche borealis</i>												
<i>Chyranda centralis</i>												
<i>Glossosoma ventrale</i>												
<i>Cheumatopsyche lasia</i>												
<i>Allomyia gnathos</i>												
<i>Neothremma alicia</i>												
<i>Agraylea salteseae</i>												
<i>Protophila coloma</i>												
<i>Mystacides interjectus</i>												
<i>Molanna flavicornis</i>												
<i>Leucotrichia pictipes</i>												
<i>Anagapetus debilis</i>												
<i>Agrypnia colorata</i>												
<i>Leptocerus americanus</i>												
<i>Polycentropus interruptus</i>												
<i>Stactobiella delira</i>												
<i>Hydropsyche morosa</i>												
<i>Glossosoma alascense</i>												
<i>Apatania zonella</i>												
<i>Lepidostoma unicolor</i>												
<i>Lepidostoma roafi</i>												
<i>Hydroptila pecos</i>												
<i>Agapetus boulderensis</i>												
<i>Hydroptila arctica</i>												
<i>Limnephilus picturatus</i>												

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Limnephilus perpusillus</i>												
<i>Limnephilus coloradensis</i>												
<i>Hydroptila argosa</i>												
<i>Hesperophylax consimilis</i>												
<i>Asynarchus nigrifrons</i>												
<i>Rhyacophila hyalinata</i>												
<i>Trienodes frontalis</i>												
<i>Rhyacophila vao</i>												
<i>Rhyacophila harmstoni</i>												
<i>Potamyia flava</i>												
<i>Oxyethira pallida</i>												
<i>Oligophlebodes minutus</i>												
<i>Oecetis cinerascens</i>												
<i>Nemotaulius hostilis</i>												
<i>Micrasema bacro</i>												
<i>Limnephilus sublunatus</i>												
<i>Limnephilus spinatus</i>												
<i>Limnephilus labus</i>												
<i>Limnephilus janus</i>												
<i>Limnephilus dispar</i>												
<i>Homophylax flavipennis</i>												
<i>Culoptila thoracica</i>												
<i>Cheumatopsyche campyla</i>												
<i>Ceraclea maculata</i>												
<i>Agrypnia glacialis</i>												
<i>Agrypnia deflata</i>												
<i>Hydroptila rono</i>												
<i>Phryganea cinerea</i>												
<i>Rhyacophila bifila</i>												

Table 9 continued.

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Rhyacophila vofixa</i>												
<i>Polycentropus aureola</i>												
<i>Limnephilus tarsalis</i>												
<i>Limnephilus secludens</i>												
<i>Lenarchus fautini</i>												
<i>Lenarchus brevipennis</i>												
<i>Hydroptila waubesiana</i>												
<i>Hydroptila consimilis</i>												
<i>Grammotaulius lorettae</i>												
<i>Glossosoma velonum</i>												
<i>Clistoronia maculata</i>												
<i>Cheumatopsyche gracilis</i>												
<i>Ceraclea tarsipunctata</i>												
<i>Allomyia chama</i>												
<i>Agrypnia straminea</i>												
<i>Dicosmoecus atripes</i>												
<i>Rhyacophila verrula</i>												
<i>Rhyacophila Alberta</i>												
<i>Limnephilus externus</i>												

Taxon	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
<i>Philarctus quaeris</i>												
<i>Limnephilus hyalinus</i>												
<i>Hydroptila xera</i>												
<i>Limnephilus indivisus</i>												
<i>Chimarra utahensis</i>												
<i>Oxyethira dualis</i>												
<i>Orthotrichia aegerfasciella</i>												
<i>Nectopsyche lahontanensis</i>												
<i>Lepidostoma stigma</i>												
<i>Lepidostoma cinereum</i>												
<i>Hydropsyche incommoda</i>												
<i>Cynellus fraternus</i>												
<i>Oecetis ochracea</i>												
<i>Neophylax splendens</i>												
<i>Wormaldia gabriella</i>												
<i>Orthotrichia cristata</i>												
<i>Limnephilus acnestus</i>												
<i>Pycnopsyche subfasciata</i>												
<i>Asynarchus circopa</i>												
<i>Limnephilus sansoni</i> *												

* Species with no adults reported or adult data not available for this study.

Table 10. Number of EPT species and records from each physiographic province in the South Platte River Basin. Numbers in parentheses indicate the number of species reported only from that physiographic province.

	Physiographic Province		
	Plains 865 - 1,499 m	Foothills Transition Zone 1,500 to 2,499 m	Mountains above 2,500 m
EPT Records	448	2,909	1,456
EPT Species	52 (19)	211 (68)	163 (43)

Table 11. Species that require more investigation to verify taxonomy, distribution, and status in the South Platte River Basin. P = plains; F = foothills transition zone; M = mountains. All comments refer to the South Platte River Basin. See records section for more information.

Taxon	Number of records	First and last years reported	Physiographic province and location
Ephemeroptera			
<i>Ameletus celer</i>	2	1998	F; Fort Collins, CO.
Apparently extant. Extensive surveys have occurred in Fort Collins with no additional specimens reported.			
<i>Callibaetis fluctuans</i>	3	1986; 1990	F; Fort Collins, P; Pawnee Grasslands, CO.
Apparently extant. Possibly occurs in other plains locations.			
<i>Callibaetis pictus</i>	3	1921; 1987	F; Tolland, Fort Collins, CO.
One confirmed record since 1921.			
<i>Centroptilum bifurcatum</i>	2	2001	F; Fort Collins, CO.
Collected from irrigation canals, additional populations may occur in other foothills streams.			
<i>Centroptilum conturbatum</i>	1	1997	F; Cherry Creek, CO.
Apparently extant. Possibly occurs in other foothills transition zone streams.			

Table 11 continued.

Taxon	Number of records	First and last years reported	Physiographic province and location
<i>Plauditus virilis</i>	2	1996	F; Fort Collins, CO.
Collected from irrigation supply canals, possibly occurs in nearby streams.			
<i>Amercaenis ridens</i>	1	1993	P; North Platte, NE.
This record represents the known western range limit for this species. It possibly still occurs in other plains streams.			
<i>Caenis punctata</i>	3	1986; 1994	F, P; streams and ponds
Possibly occurs in other large foothills rivers and ponds.			
<i>Caenis tardata</i>	2	1993; 1994	P; N Platte, NE., Berthoud, CO.
Populations possibly occur in larger, sandy bottom rivers on plains.			
<i>Ephemerella apopsis</i>	1	1947	M; Chasm Lake, RMNP, CO.
Endemic. Known only from the type material. Taxonomy considered valid. Two site visits were made at type locality each summer of 2007, 2008, and 2009.			
<i>Ephemera compar</i>	1	1875	"Foothills, Colorado"
Endemic, considered extinct. Known from only one male specimen from "Colorado foothills". Taxonomy considered valid.			
<i>Cinygmula tarda</i>	1	1996	M; Knight-Imbler SWA
This is the only record from Colorado. Possibly occurs in other high elevation streams.			
<i>Maccaffertium mexicanum integrum</i>	2	1995; 2007	P; North Platte, NE., Hershey, CO.
These are the westernmost records of this species in N. America.			
<i>Macdunnoa persimplex</i>	2	1935	F; Fort Collins, CO.
Likely extirpated. No recent records despite extensive surveys in Fort Collins area.			

Table 11 continued.

Taxon	Number of records	First and last years reported	Physiographic province and location
<i>Rhithrogena undulata</i>	1	1971	F; Fort Collins, CO.
Determined from subimago, need imago to verify status.			
<i>Stenacron interpunctatum</i>	3	2007	P; Julesburg, CO.
First collected in the SPRB in 2007 from the South Platte River.			
<i>Paraleptophlebia temporalis</i>	1	1987	F; Woodland Park, CO.
Possibly present in other high elevation streams.			
Plecoptera			
<i>Capnia arapahoe</i>	4	1988; 2009	F; Poudre Canyon
Endemic. Apparently stable population in one stream. Under emergency petition as federally endangered species. Upper reaches of habitat is under development.			
<i>Capnia vernalis</i>	3	1943; 2009	F; Littleton, Deckers, CO.
All records are from the South Platte River.			
<i>Isocapnia hyalita</i>	1	2005	M; Empire, CO.
Possibly additional populations in other high elevation streams.			
<i>Mesocapnia frisoni</i>	14	1943; 2008	F; Berthoud, CO.
Reported only from the Little Thompson River.			
<i>Paracapnia angulata</i>	3	1992; 2001	F; in and near Fort Collins
Known only from Cache la Poudre River and one of its tributary.			
<i>Alloperla thalia</i>	1	1991	F; Cherokee Park, CO.
Known from a single record.			
<i>Suwallia wardi</i>	2	1973; 1990	F; M; Como, CO.
Described in SPRB but known from only 2 records.			
<i>Sweltsa fidelis</i>	1	1984	M; Red Rock Lake, CO.
Additional populations likely occur in other small subalpine streams.			

Table 11 continued.

Taxon	Number of records	First and last years reported	Physiographic province and location
<i>Paraleuctra occidentalis</i>	2	1937; 2003	M; near RMNP
Widespread in North America, possibly common in other alpine streams.			
<i>Perlomyia utahensis</i>	2	1991; 2003	M; Tolland, Fairplay, CO.
Additional populations likely occur in other subalpine streams.			
<i>Arcynopteryx compacta</i>	5	1994; 2009	M; Chasm Lake, Ward, CO
Likely occurs in other high elevation lake outlets.			
<i>Cultus aestivalis</i>	7	1988; 2005	F; Fort Collins area
Known only from seven records all within the Cache la Poudre River drainage.			
<i>Isogenoides elongatus</i>	4	1883; 1889	F; Fort Collins, Boulder, CO.
Probably extirpated. Historically occurred in the foothills transition zone.			
<i>Isoperla bilineata</i>	1	1925	P; Colorado
Status uncertain. Specimen unavailable for verification. Need to focus search effort on plains.			
<i>Isoperla marlynia</i>	3	2004	P; eastern CO and NE.
May occur further west along the South Platte River than what records indicate.			
<i>Isoperla mormona</i>	3	1938; 1986	M; Park Co., CO.
Likely occurs in similar habitats at high elevations within other portions of basin.			
<i>Taenionema pacifica</i>	4	1907; (other years not available)	F; Boulder, Fort Collins, CO.
Probably extirpated. Historically occurred in currently urbanized areas of the foothills transition zone.			
<i>Taeniopteryx burksi</i>	1	2004	P; North Platte, NE.
Likely occurs in South Platte River in NE Colorado.			

Table 11 continued.

Taxon	Number of records	First and last years reported	Physiographic province and location
Trichoptera			
<i>Allomyia chama</i>	1	2002	M; Pingree Park, CO.
Possibly occurs in other high elevation streams.			
<i>Allomyia tripunctata</i>	3	1995; 1999	F, M; Larimer County
Wide elevational distribution but few records. Probably occurs in foothills streams.			
<i>Apatania zonella</i>	3	1996; 2007	M; Chasm and Summit Lakes, CO.
Additional populations likely occur in other high elevation lakes.			
<i>Micrasema bactro</i>	2	1995	F; Rustic, CO., M; RMNP
Targeting specific habitat may reveal additional populations.			
<i>Glossosoma alascense</i>	1	1981	M; Chicago Forks Picnic area, CO.
Only record in Colorado, need adult males to confirm occurrence.			
<i>Glossosoma velonum</i>	1	2007	F; Horsetooth Reservoir, CO.
This is 1 of 2 records in Colorado, possibly transported into SPRB from transmountain water diversion.			
<i>Helicopsyche</i> new species	1	2009	F; Red Mt. Ranch, CO.
Currently being described.			
<i>Cheumatopsyche campyla</i>	5	2007	P; Nebraska and eastern Colorado
New SPRB record, collected from plains in 2007.			
<i>Cheumatopsyche lasia</i>	2	2003; 2007	P; North Platte, NE.
Possibly occurs in South Platte River in eastern Colorado.			
<i>Hydropsyche morosa</i>	2	1905; 1986	F; Fort Collins P; Pawnee Grassland
Likely occurs in other foothills transition zone and plains streams.			

Table 11 continued.

Taxon	Number of records	First and last years reported	Physiographic province and location
<i>Parapsyche almota</i>	2	1981	M; Georgetown Res, CO.
Rarely collected but possibly more common than records indicate.			
<i>Smicridea signata</i>	1	1903	F; Fort Collins, CO.
Possible locality labeling error in vial or extirpated.			
<i>Hydroptila waubesiana</i>	1	2007	P; Julesburg, CO.
New species in Colorado and the SPRB, likely occurs in Nebraska.			
<i>Hydroptila xera</i>	3	1974; 1989	M; S Platte River, CO.
Known from small distribution along the South Platte River in the mountains.			
<i>Ochrotrichia susanae</i>	2	1995	M; High Creek Fen, CO.
3 populations of this species known in world. Under emergency petition for Federal Endangered Species Act.			
<i>Orthotrichia aegerfasciella</i>	2	1988; 1989	F; Fort Collins, CO.
Uncertain. 2 recent records from Fort Collins.			
<i>Orthotrichia cristata</i>	1	2008	F; Fort Collins, CO.
New Colorado record. Additional populations may occur in lower foothills and upper plains streams.			
<i>Oxyethira dualis</i>	1	1981	M; Red Rock Lake, CO.
Possibly occurs near other high elevation lakes. Effort was made in 2007 and 2008 to locate extant populations at this locality.			
<i>Oxyethira pallida</i>	2	1989; 1991	F; Fort Collins, CO.
No additional reports of this species despite extensive collections in Fort Collins. Likely still present and easily overlooked in collections.			
<i>Oxyethira serrata</i>	1	2009	F; Standley Lake, Jefferson Co, CO.
New SPRB record. Additional populations likely occur in lower foothills transition zone.			

Table 11 continued.

Taxon	Number of records	First and last years reported	Physiographic province and location
<i>Stactobiella delira</i>	1	1990	F; Phantom Canyon, CO.
Additional populations likely occur in foothills and mountain streams.			
<i>Lepidostoma cinereum</i>	1	1995	M; S Fork Cache la Poudre River, CO.
Widespread in North America but only one record in SPRB.			
<i>Ceraclea maculata</i>	3	??; 2007	P; eastern CO and NE, F; Drake, CO.
Populations may occur between reported locations.			
<i>Lepidostoma stigma</i>	1	1907	F; Boulder, CO.
Not reported since female type was described from Boulder in 1907.			
<i>Ceraclea tarsipunctata</i>	1	2007	P; Julesburg, CO.
New SPRB record. Probably occurs in South Platte River in Nebraska.			
<i>Leptocerus americanus</i>	2	2007	P; eastern CO.
New state record in Colorado and SPRB.			
<i>Nectopsyche candida</i>	2	1993; 1994	P; North Platte, NE.
Additional populations probably occur in plains portion of the South Platte River in Colorado.			
<i>Nectopsyche gracilis</i>	1	2000	F; Fort Collins, CO.
Possibly occurs in sandy bottom plains streams.			
<i>Nectopsyche lahontanensis</i>	1	1988	F; Fort Collins, CO.
Possibly occurs in other foothills and upper plains streams.			
<i>Oecetis cinerascens</i>	2	2007	F; Jefferson Co, CO., P; North Platte, NE.
New SPRB record. Additional populations likely occur on plains up to foothills.			

Table 11 continued.

Taxon	Number of records	First and last years reported	Physiographic province and location
<i>Oecetis ochracea</i>	2	1930; 1983	F; Fort Collins, Denver, CO.
Apparently extant and likely more common than records indicate as the 1983 collection was from a pond in Fort Collins.			
<i>Anabolia consocia</i>	1	1995	P; Carr, CO.
Collected from plains stream. Specimen was identified from pupa.			
<i>Asynarchus circopa</i>	1	2007	M; Pingree Park, CO.
This species is reported from Colorado and SPRB for the first time.			
<i>Grammotaulius lorettae</i>	1	1995	M; Lost Lake, Larimer Co., CO.
Location not verified, either S. Platte or N. Platte Basin at Cameron Pass.			
<i>Hesperophylax consimilis</i>	2	1986; 1994	M; RMNP, Pike NF, CO.
Likely occurs at high elevations between known locations.			
<i>Lenarchus brevipennis</i>	2	1905; 1980	M; S Boulder Creek and Joe Wright Creek, CO.
Reported from high elevation streams in SPRB.			
<i>Lenarchus fautini</i>	1	1995	M; Lost Lake, Larimer Co., CO.
Possibly occurs in other high elevation lakes.			
<i>Limnephilus acnestus</i>	3	2007	P; Denver, CO.
Specimen may have been transported into the SPRB from Western Slope.			
<i>Limnephilus dispar</i>	2	1982; 2003	M; Red Rock Lake, Boulder Co., CO.
Possibly occurs in other high elevation lakes.			
<i>Limnephilus labus</i>	3	1939; 1998	M; Boulder Co., Gilpin Co., CO.
Apparently extant. Male and female described from SPRB, reported only one other time.			

Table 11 continued.

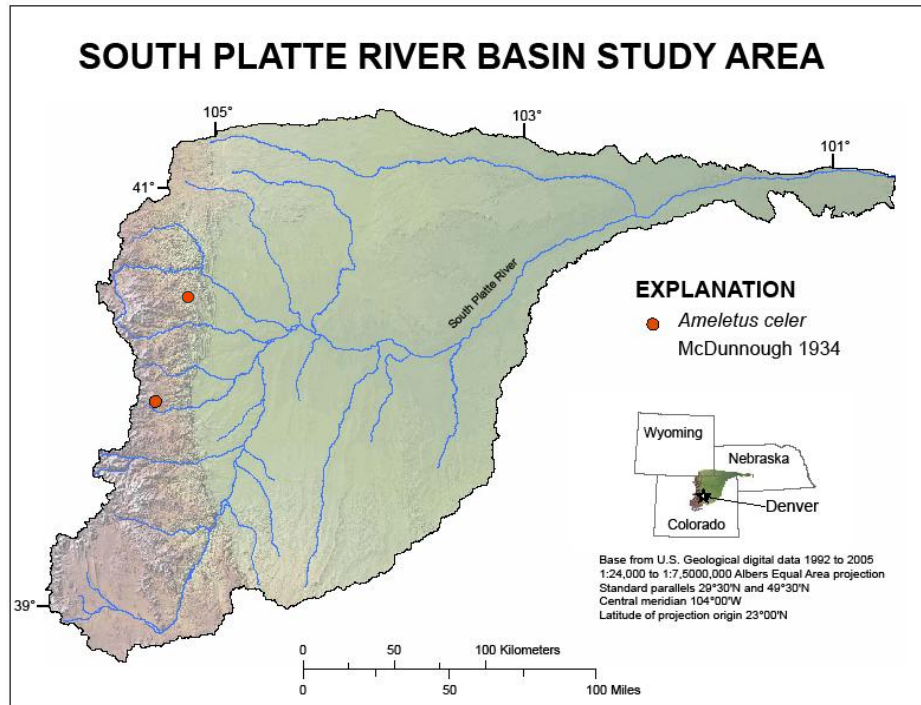
Taxon	Number of records	First and last years reported	Physiographic province and location
<i>Limnephilus sansoni</i>	2	1925; 1998	M; Boulder Co., Gilpin Co, CO.
Possibly occurs at other high elevation habitats.			
<i>Limnephilus secludens</i>	2	1935; 1995	F; Fort Collins, M; Lost Lake, Larimer Co, CO.
Apparently extant, one report since 1935. May occur in temporary ponds.			
<i>Limnephilus sublunatus</i>	3	1924; 1995	M; Larimer Co., CO.
Probably occurs in other high elevation lakes.			
<i>Limnephilus taloga</i>	3	1986; 1999	F; Larimer CO, P; Pawnee Grassland, CO.
May occur in intermittent ponds on plains.			
<i>Limnephilus tarsalis</i>	3	1920; 1995	M; Ward, F; Rustic, Estes Park, CO.
Described from Ward, CO. with only one recent record available. May occur in other high elevation streams.			
<i>Psychoglypha ormiae</i>	4	1980; 2003	M; Larimer and Park Counties, CO.
Additional populations likely occur between known locations.			
<i>Pycnopsyche subfasciata</i>	1	1974	F; Fort Collins, CO.
May occur in other foothills transition zone streams.			
<i>Agrypnia colorata</i>	2	1990; 1999	F; Larimer Co, CO.
May occur in other lakes or marshes.			
<i>Agrypnia straminea</i>	1	1983	M; Nymph Lake, RMNP.
May occurs in other high elevation lakes.			
<i>Cyrnellus fraternus</i>	1	2007	P; North Platte, NE.
New SPRB state record. Possibly occurs in eastern Colorado.			

Table 11 continued.

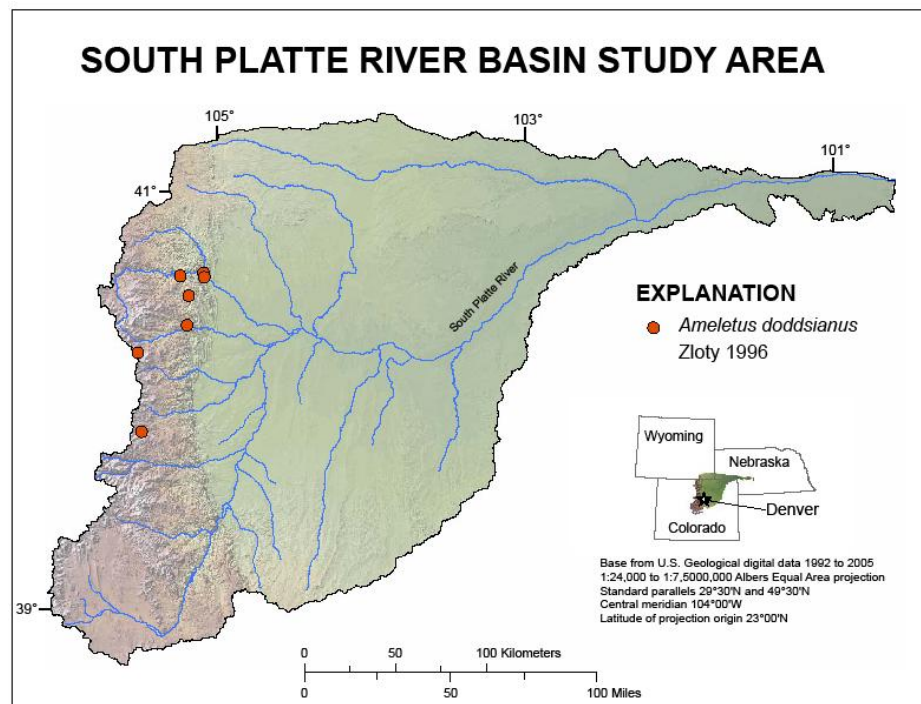
Taxon	Number of records	First and last years reported	Physiographic province and location
<i>Polycentropus aureolus</i>	1	1995	M; Poudre Pass, Larimer Co, CO.
Possibly occurs in other high elevation lakes.			
<i>Polycentropus interruptus</i>	1	1914; 1944	F; Boulder, Fort Collins, CO.
Not reported in over 70 years.			
<i>Rhyacophila bifila</i>	2	1995; 1996	F; Cache la Poudre River, CO.
Possibly more common than records indicate.			
<i>Rhyacophila vao</i>	3	1984; 1995	M; Larimer Co, CO.
Probably occurs in other high elevation streams.			
<i>Rhyacophila vofixa</i>	1	2008	M; near Chasm Lake
New record for SPRB. Likely occurs in other high elevation streams.			
<i>Oligophlebodes ardis</i>	2	1938; 2009	M; Berthoud Pass, near Fairplay
Known only from high elevation locations in the southern portion of the basin.			

Appendix A

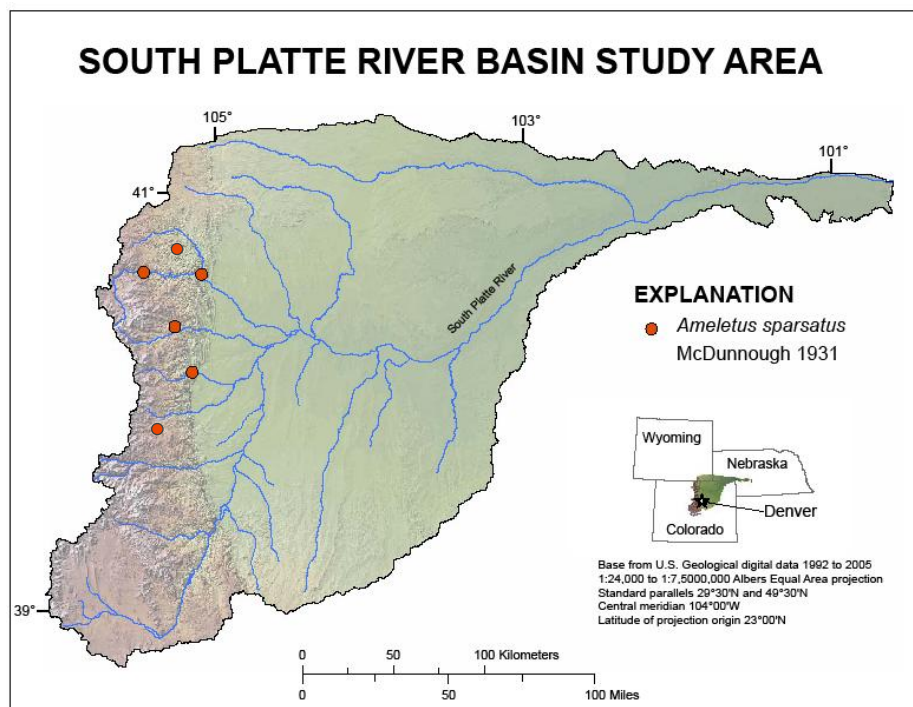
Mayfly Distribution Maps



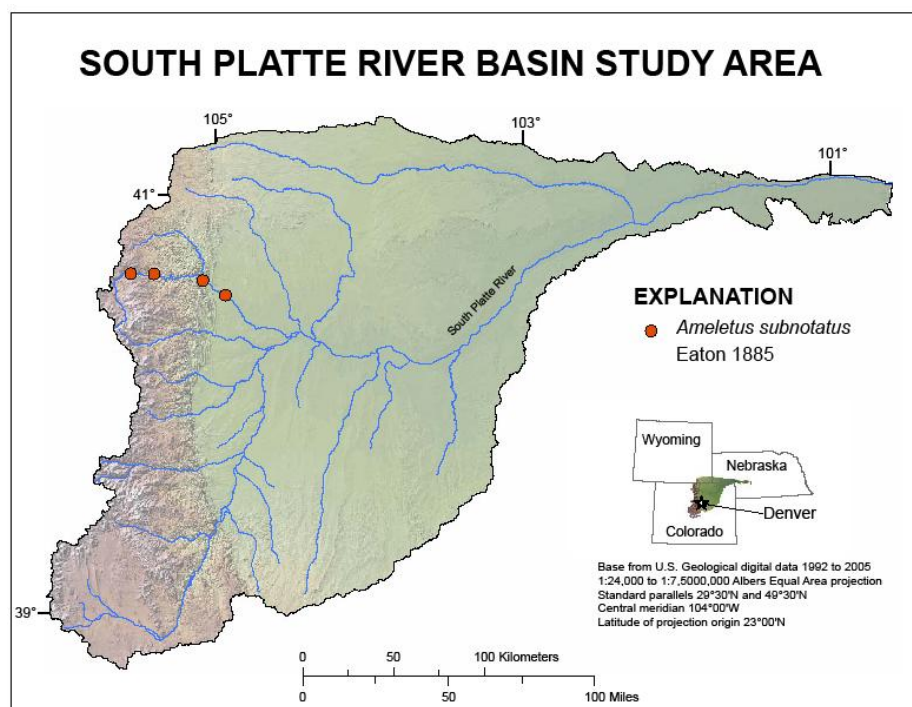
Distribution of *Ameletus celer* collections in the South Platte River Basin.



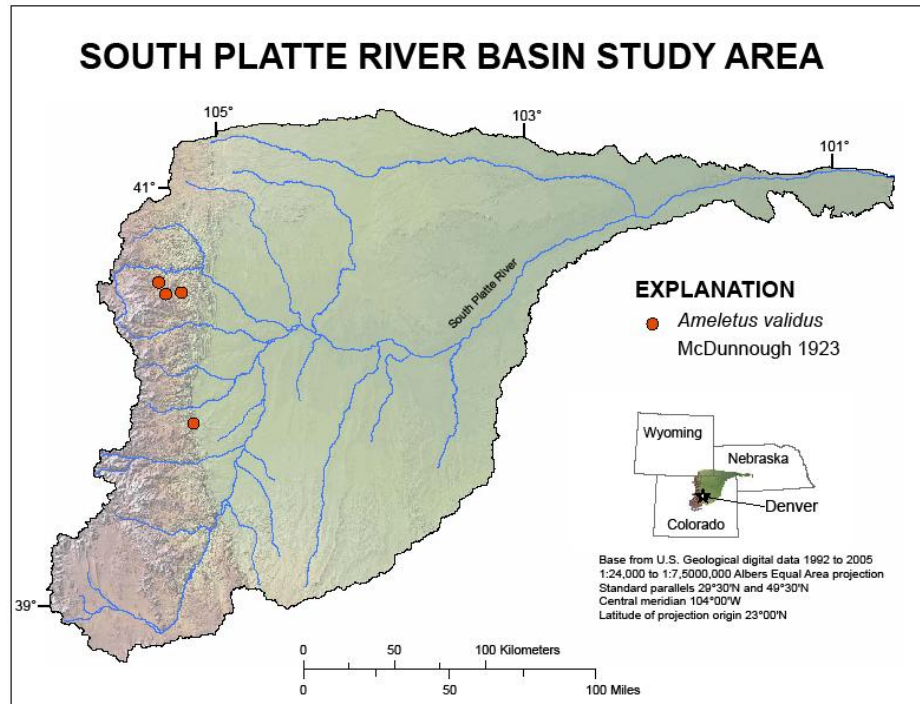
Distribution of *Ameletus doddsianus* collections in the South Platte River Basin.



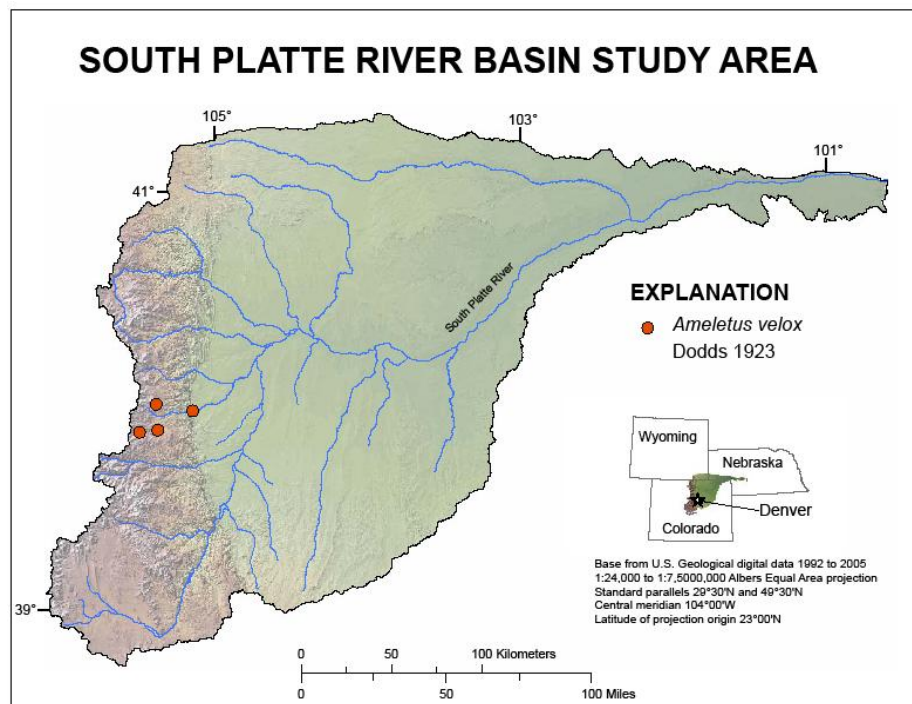
Distribution of *Ameletus sparsatus* collections in the South Platte River Basin.



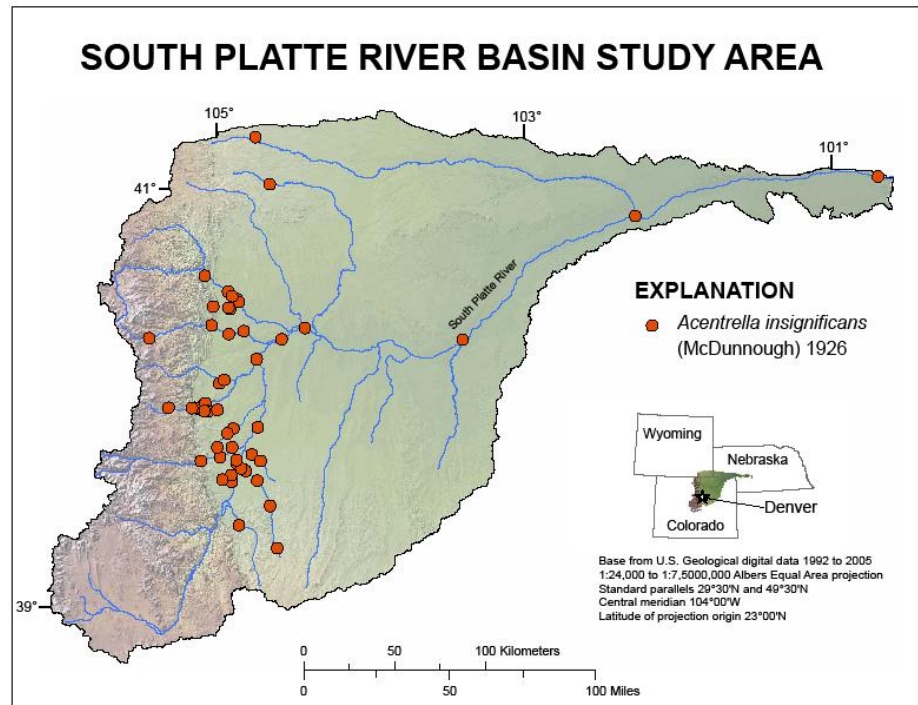
Distribution of *Ameletus subnotatus* collections in the South Platte River Basin.



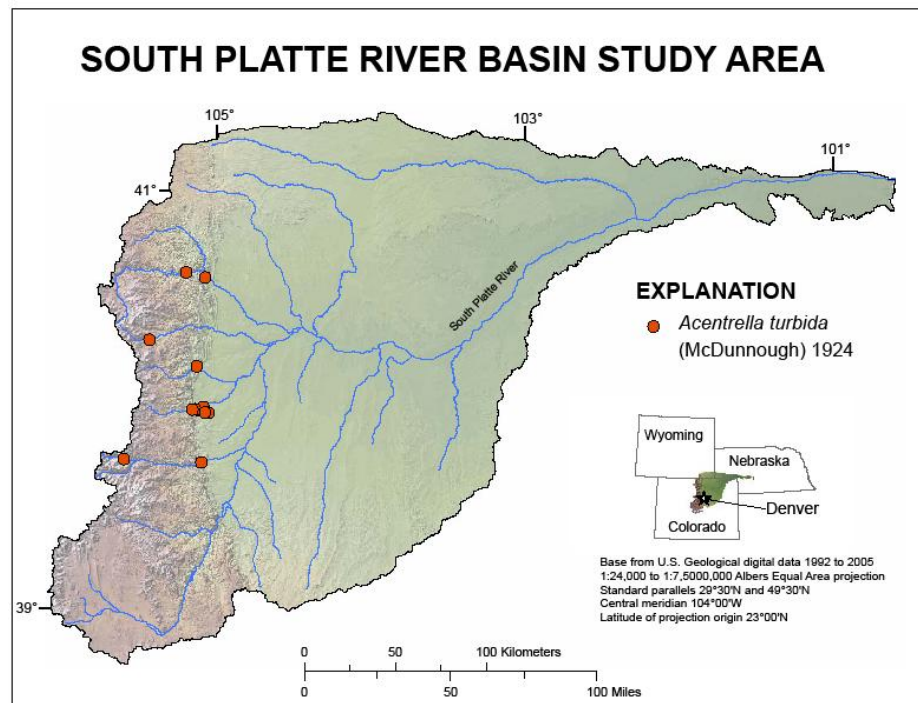
Distribution of *Ameletus validus* collections in the South Platte River Basin.



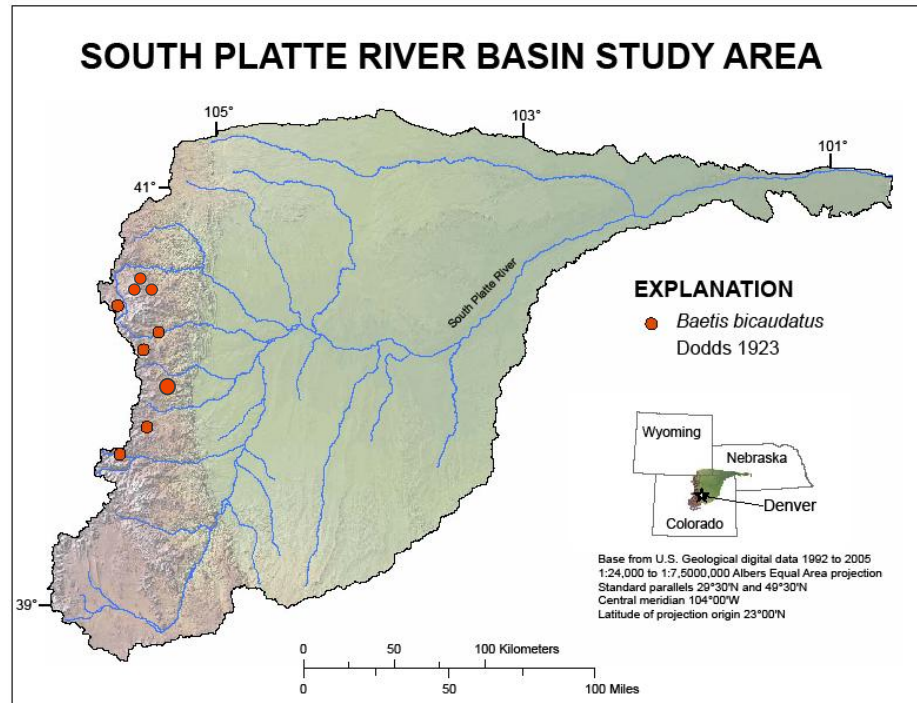
Distribution of *Ameletus velox* collections in the South Platte River Basin.



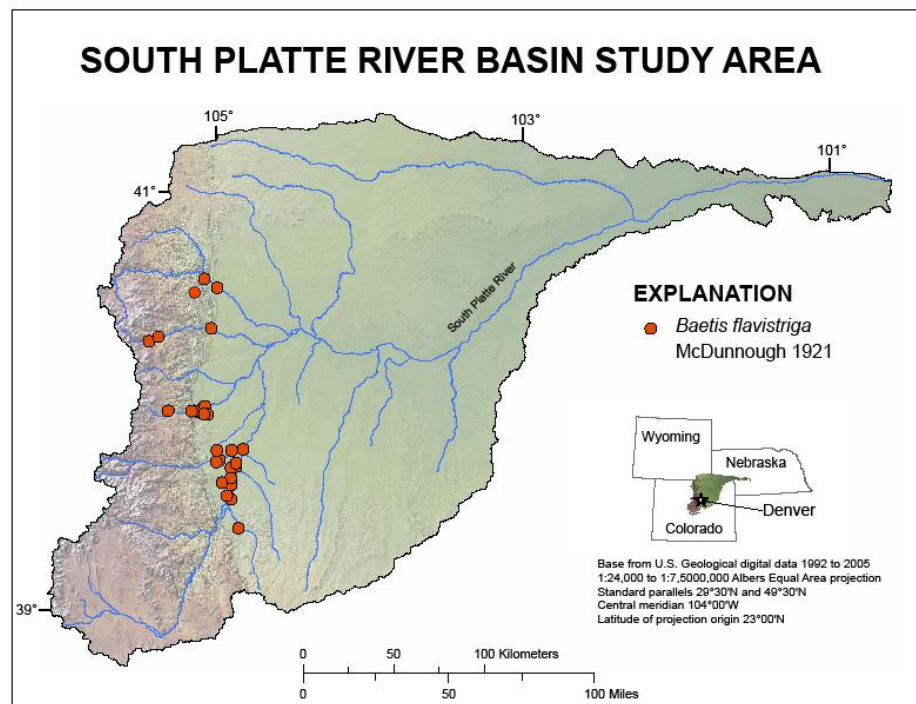
Distribution of *Acentrella insignificans* collections in the South Platte River Basin.



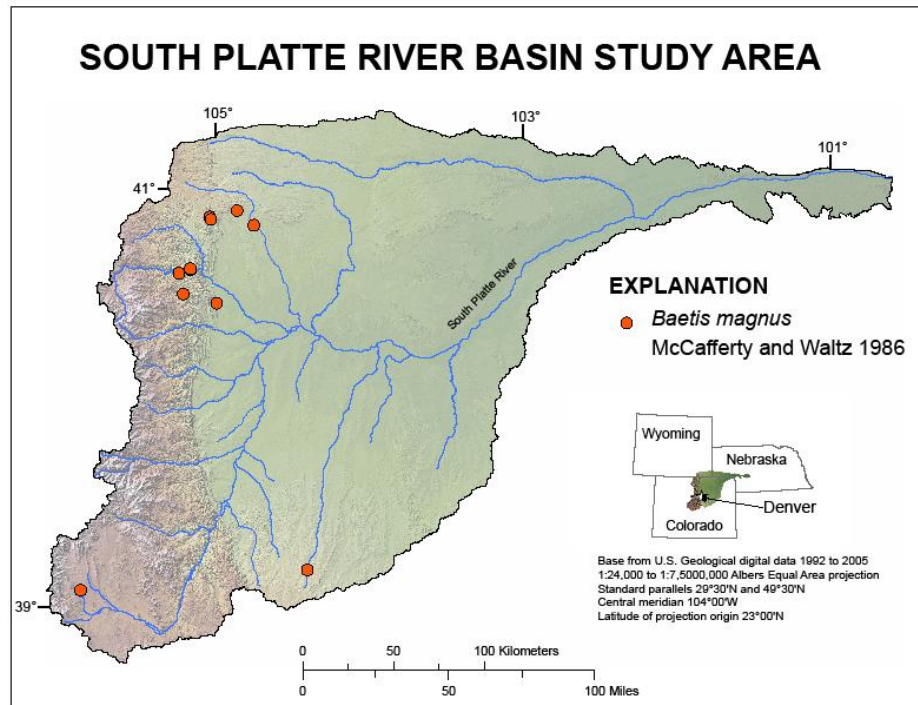
Distribution of *Acentrella turbida* collections in the South Platte River Basin.



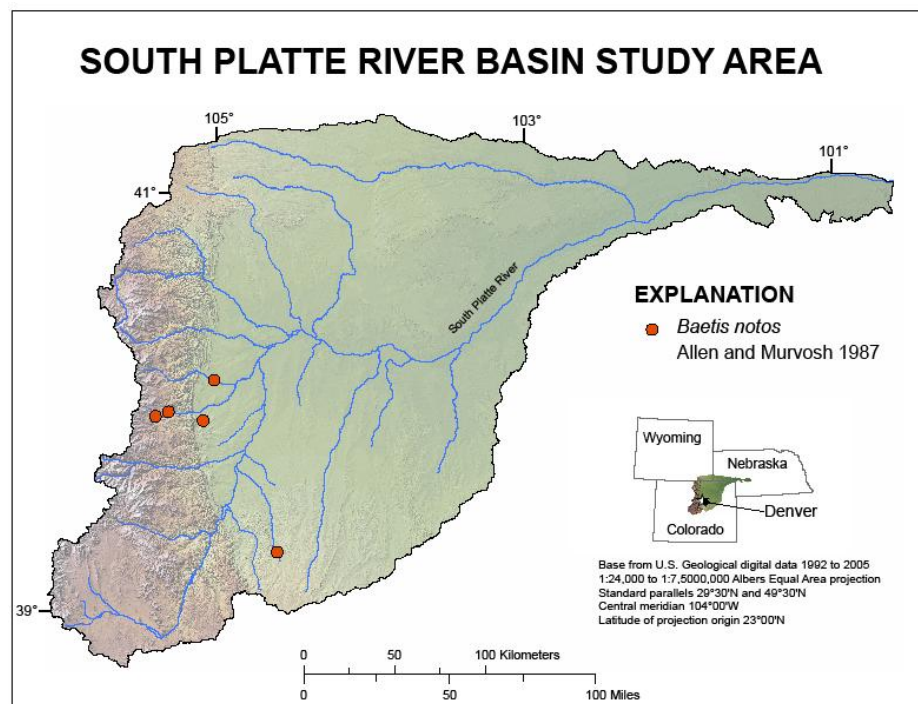
Distribution of *Baetis bicaudatus* collections in the South Platte River Basin.



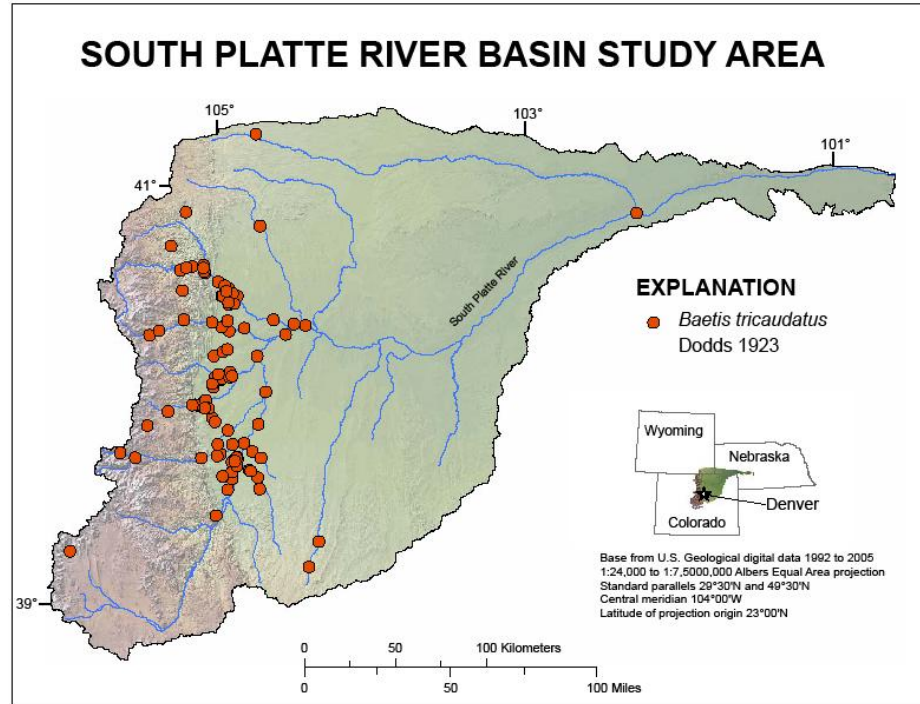
Distribution of *Baetis flavistriga* collections in the South Platte River Basin.



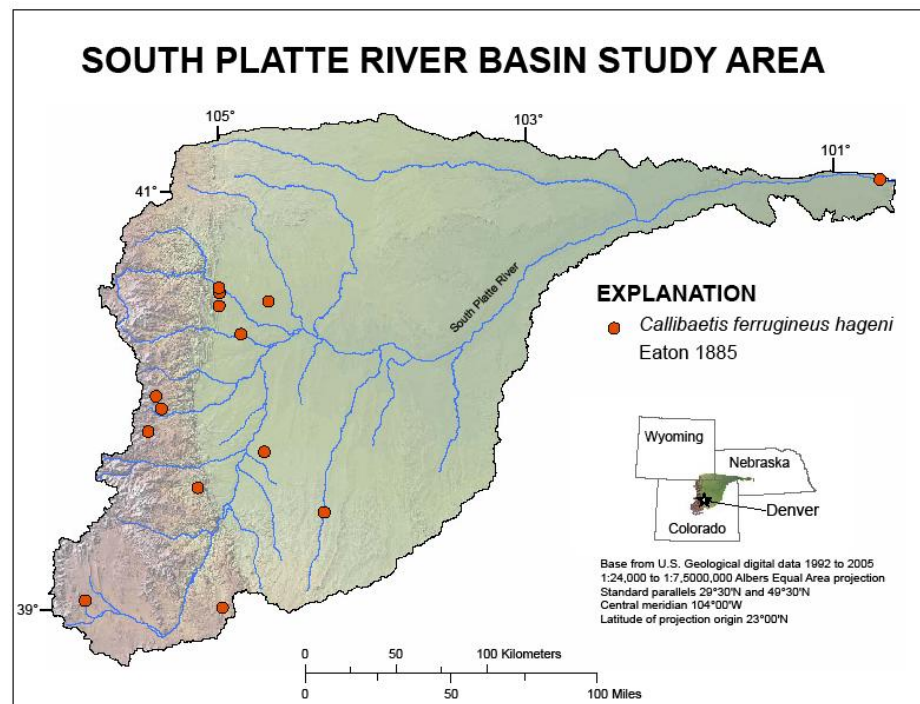
Distribution of *Baetis magnus* collections in the South Platte River Basin.



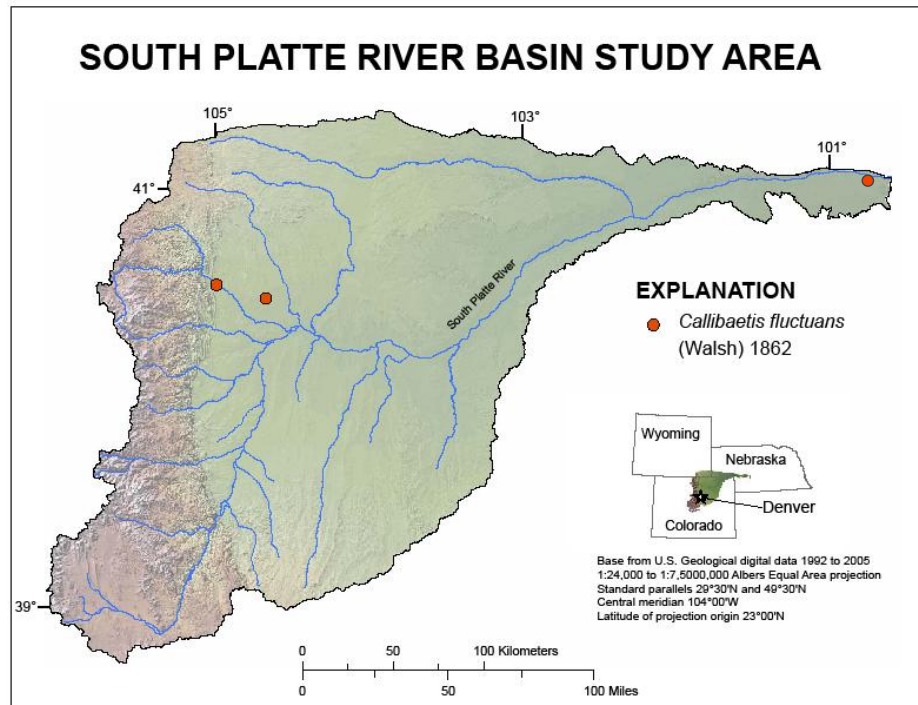
Distribution of *Baetis notos* collections in the South Platte River Basin.



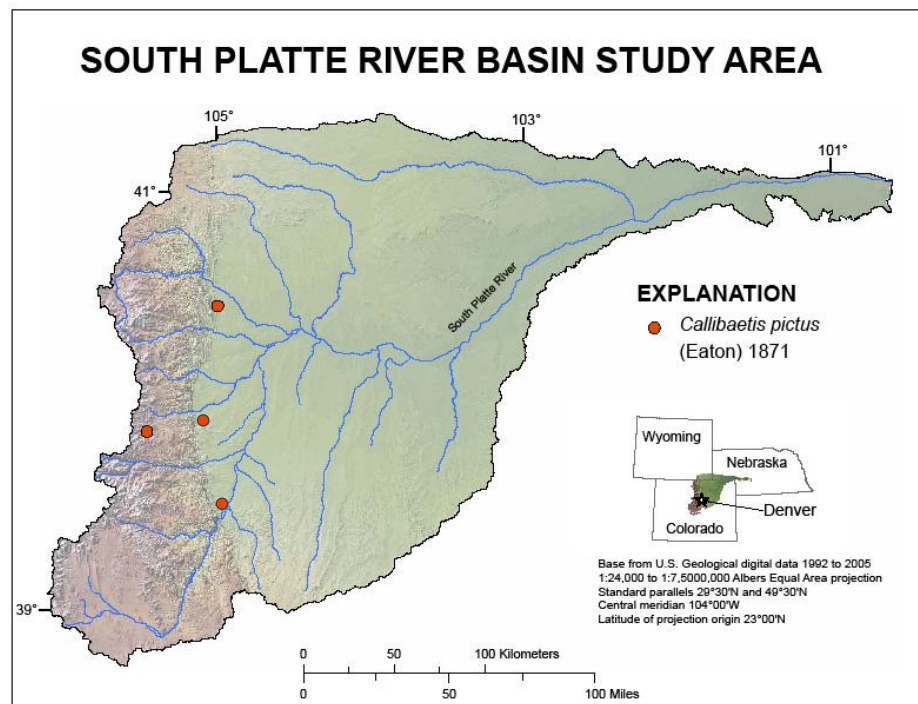
Distribution of *Baetis tricaudatus* collections in the South Platte River Basin.



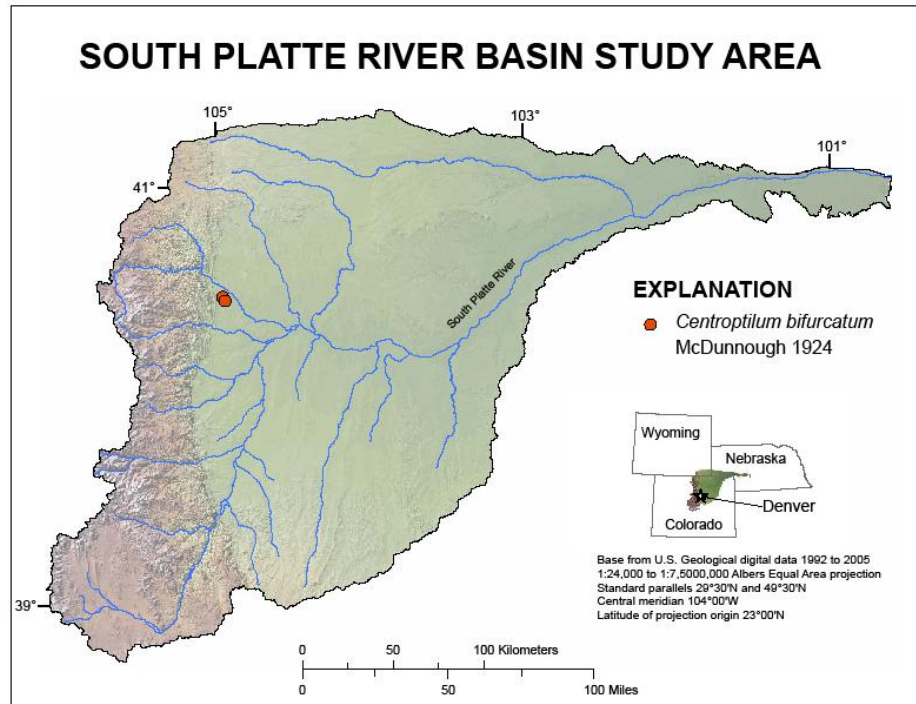
Distribution of *Callibaetis ferrugineus hageni* collections in the South Platte River Basin.



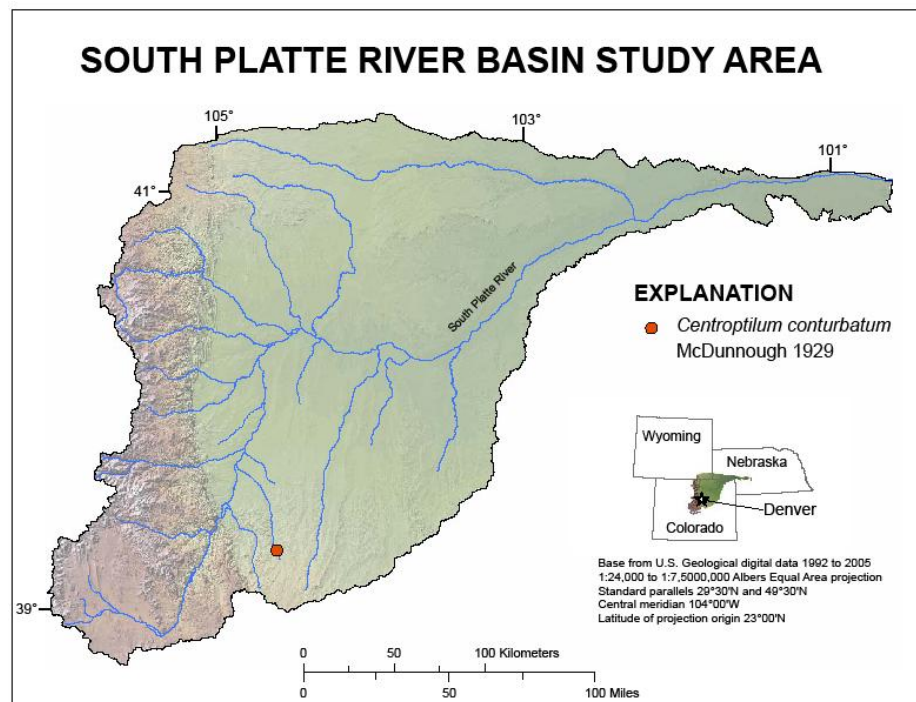
Distribution of *Callibaetis fluctuans* collections in the South Platte River Basin.



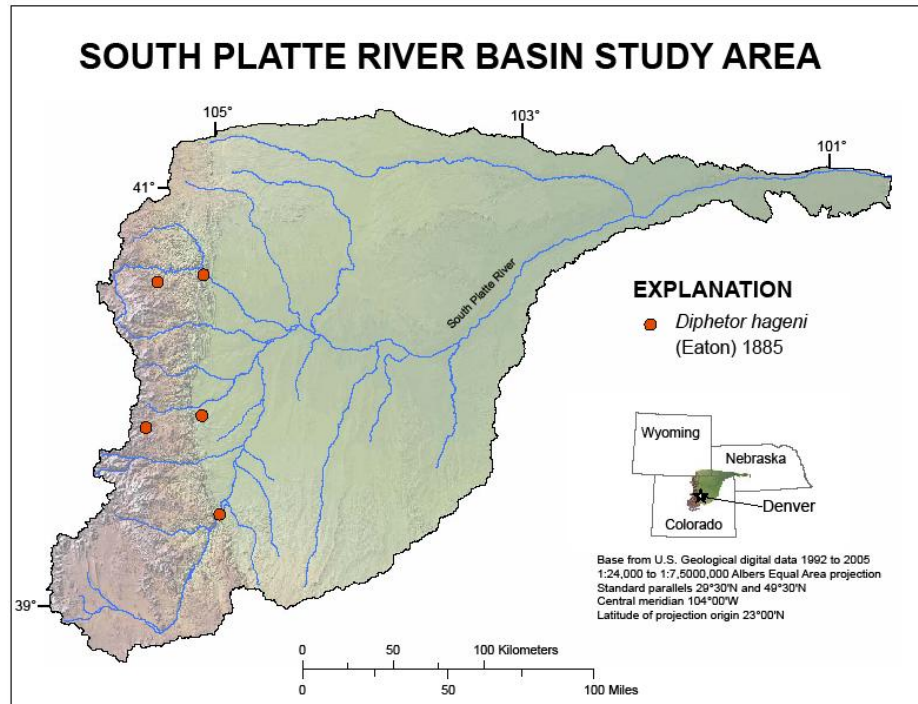
Distribution of *Callibaetis pictus* collections in the South Platte River Basin.



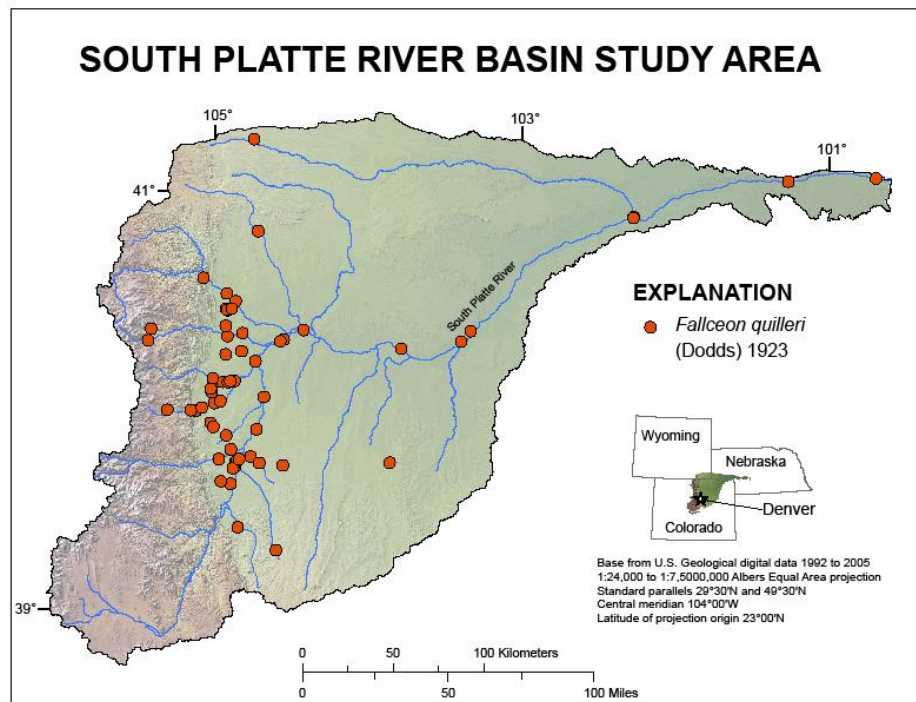
Distribution of *Centropitulum bifurcatum* collections in the South Platte River Basin.



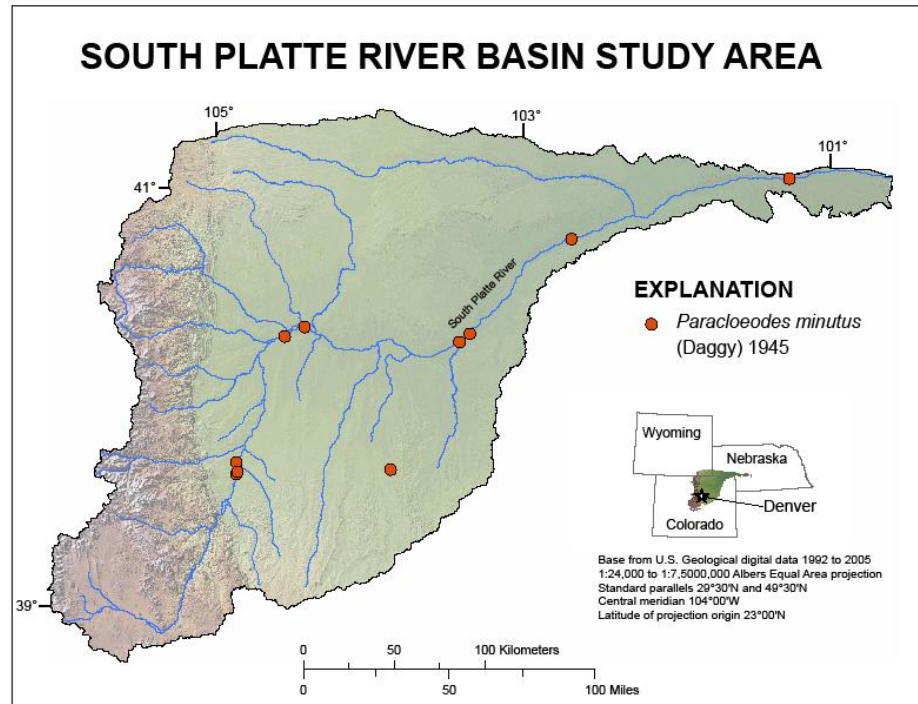
Distribution of *Centropitulum conturbatum* collections in the South Platte River Basin.



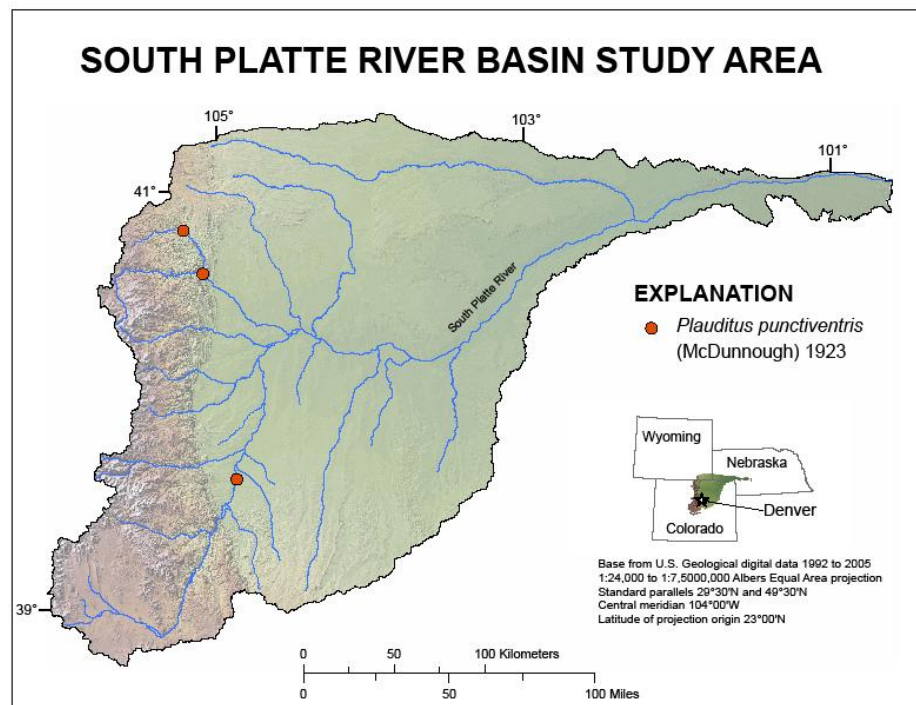
Distribution of *Dipheter hageni* collections in the South Platte River Basin.



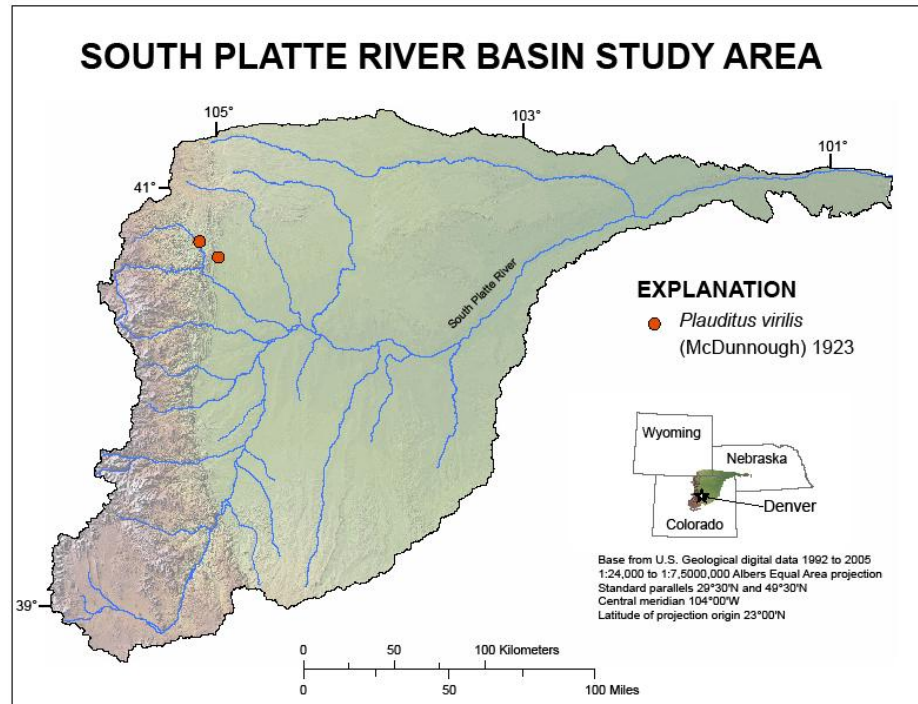
Distribution of *Fallceon quilleri* collections in the South Platte River Basin.



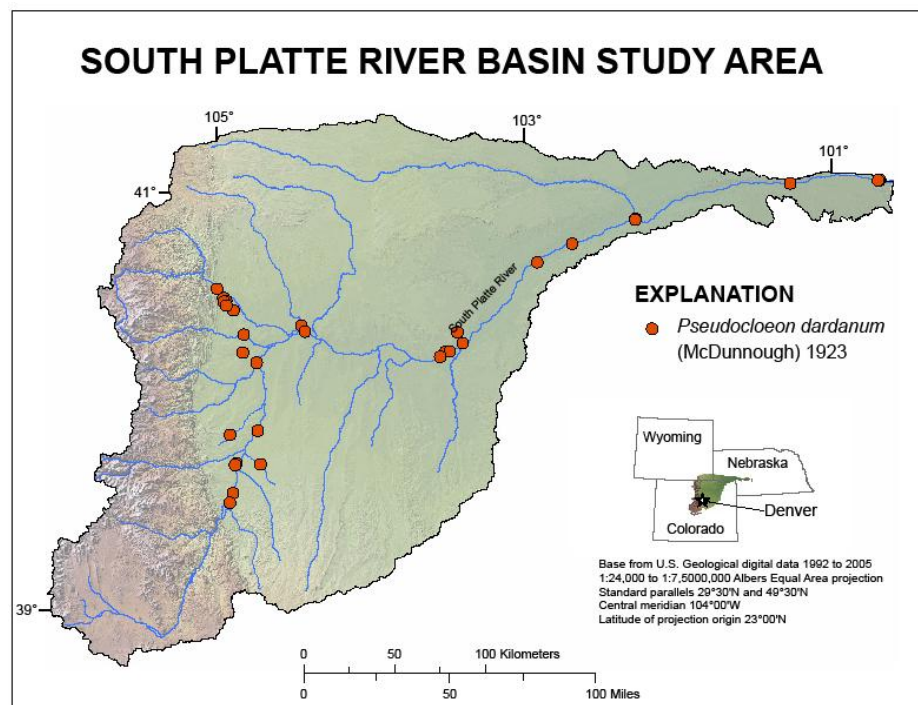
Distribution of *Paracloeodes minutus* collections in the South Platte River Basin.



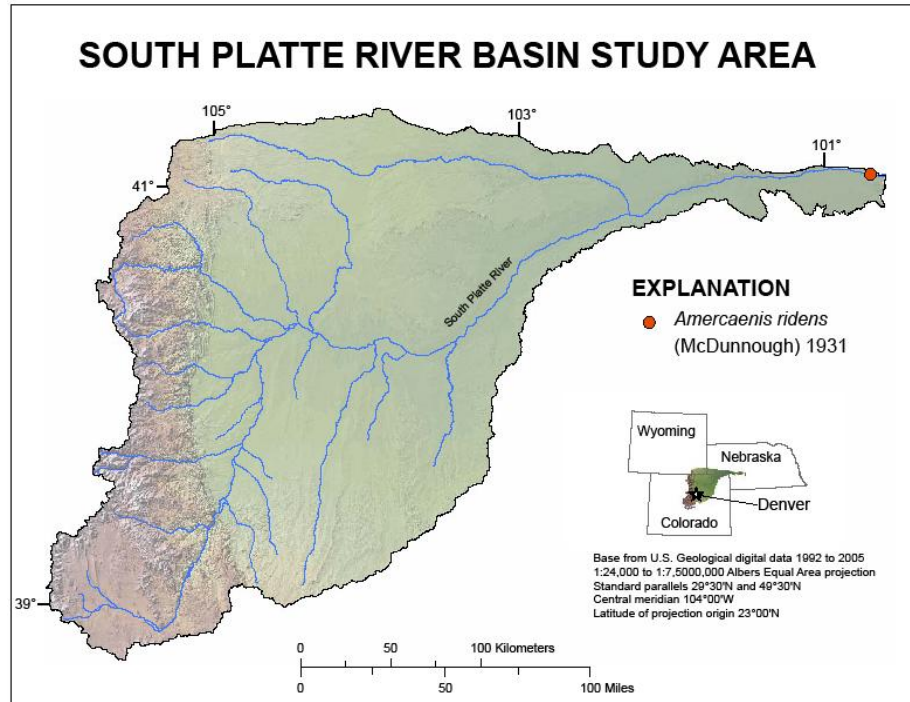
Distribution of *Plauditus punctiventris* collections in the South Platte River Basin.



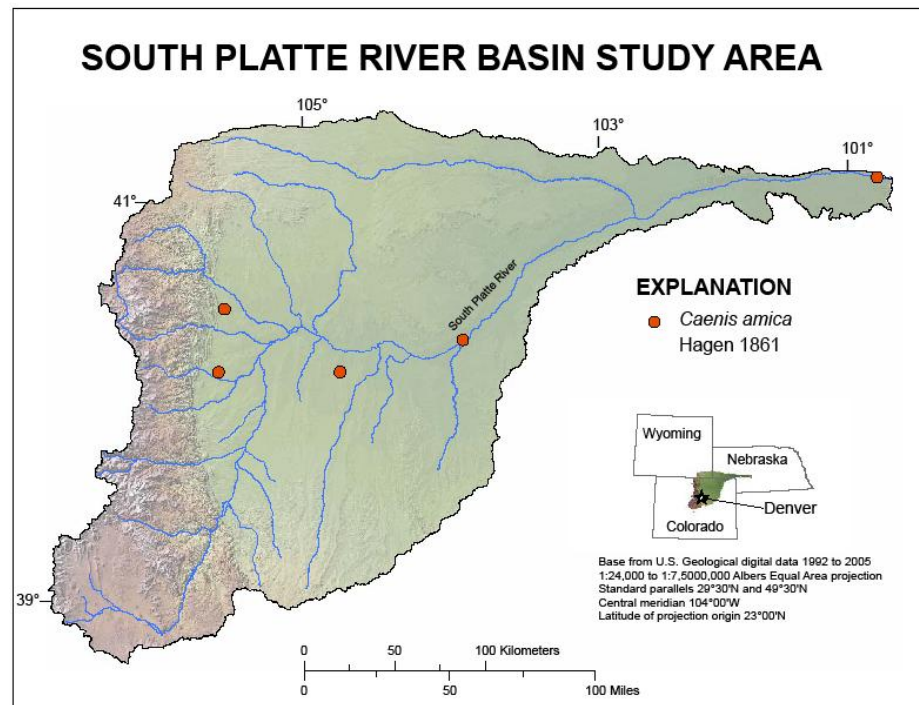
Distribution of *Plauditus virilis* collections in the South Platte River Basin.



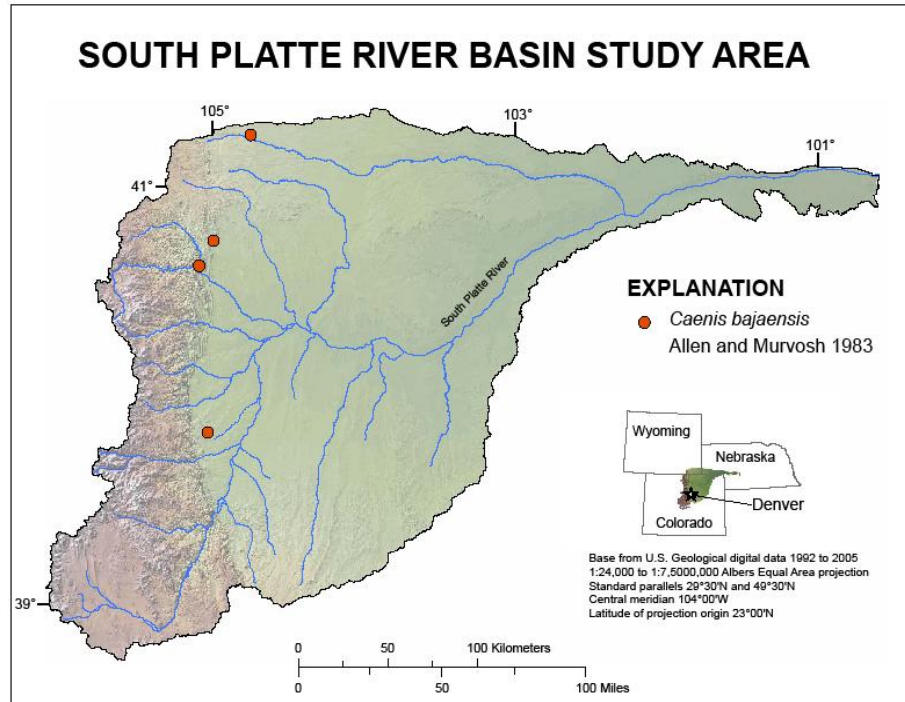
Distribution of *Pseudocloeon dardanum* collections in the South Platte River Basin.



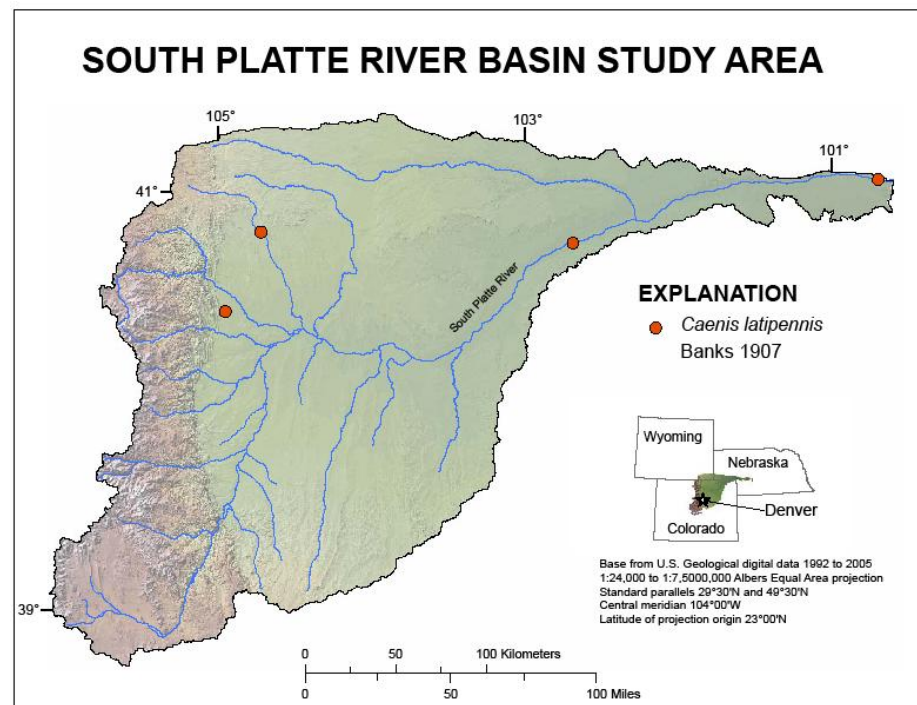
Distribution of *Amercaenis ridens* collections in the South Platte River Basin.



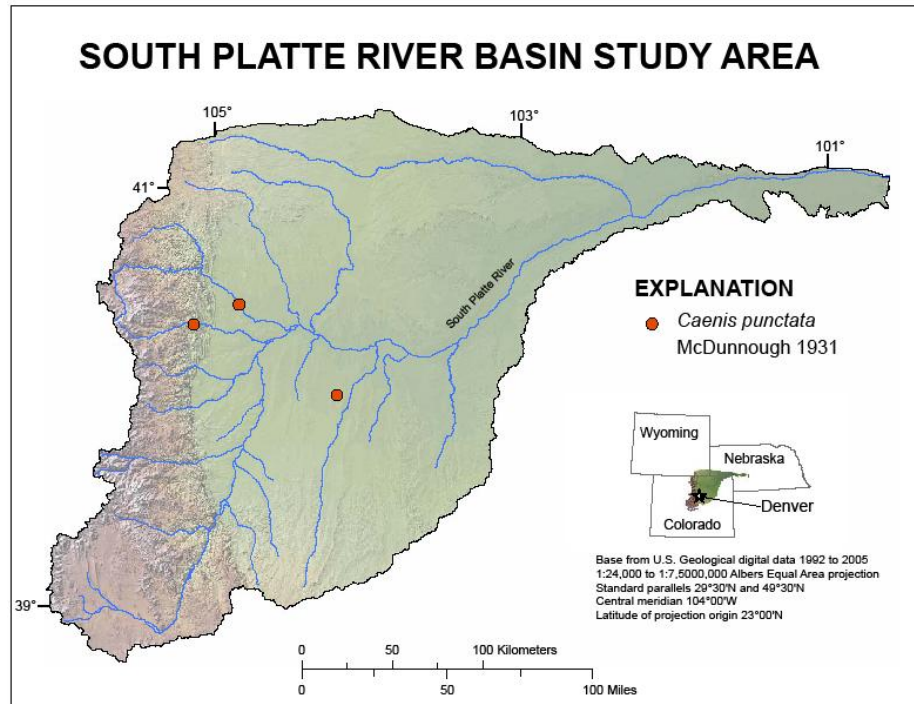
Distribution of *Caenis amica* collections in the South Platte River Basin.



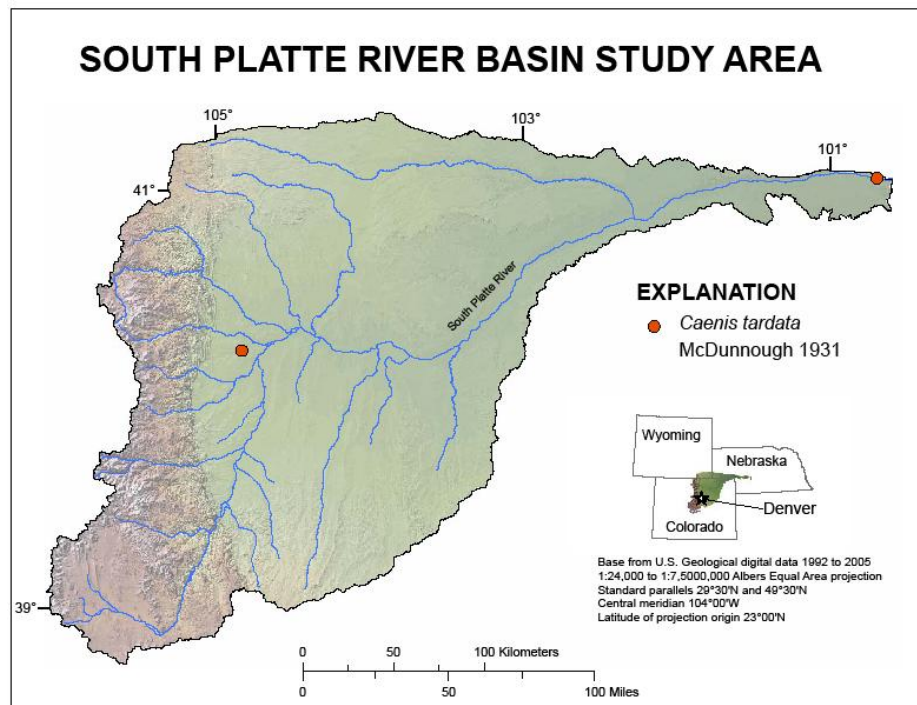
Distribution of *Caenis bajaensis* collections in the South Platte River Basin.



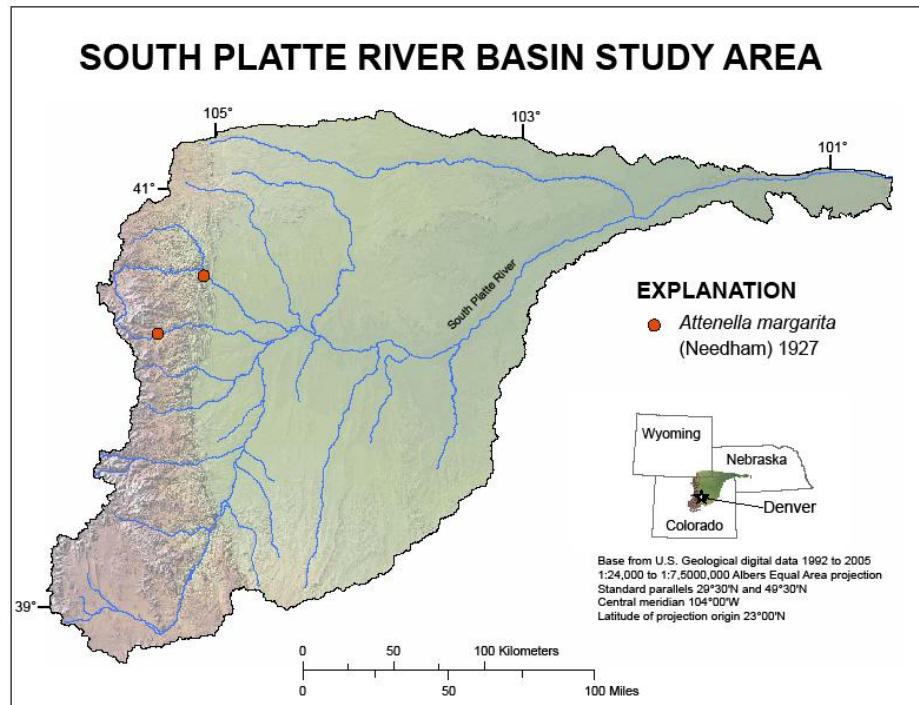
Distribution of *Caenis latipennis* collections in the South Platte River Basin.



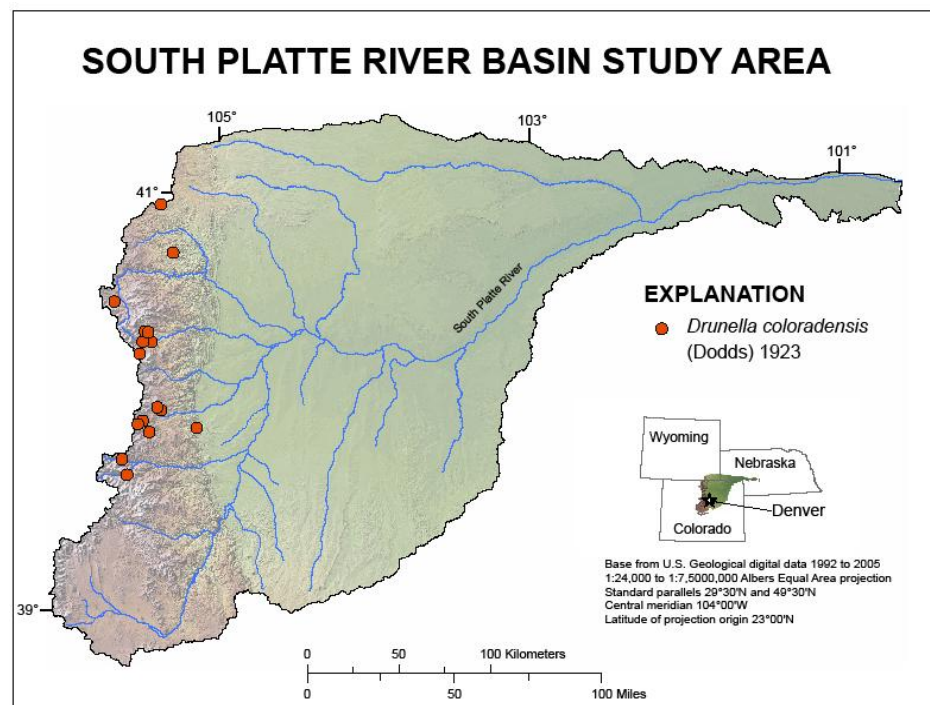
Distribution of *Caenis punctata* collections in the South Platte River Basin.



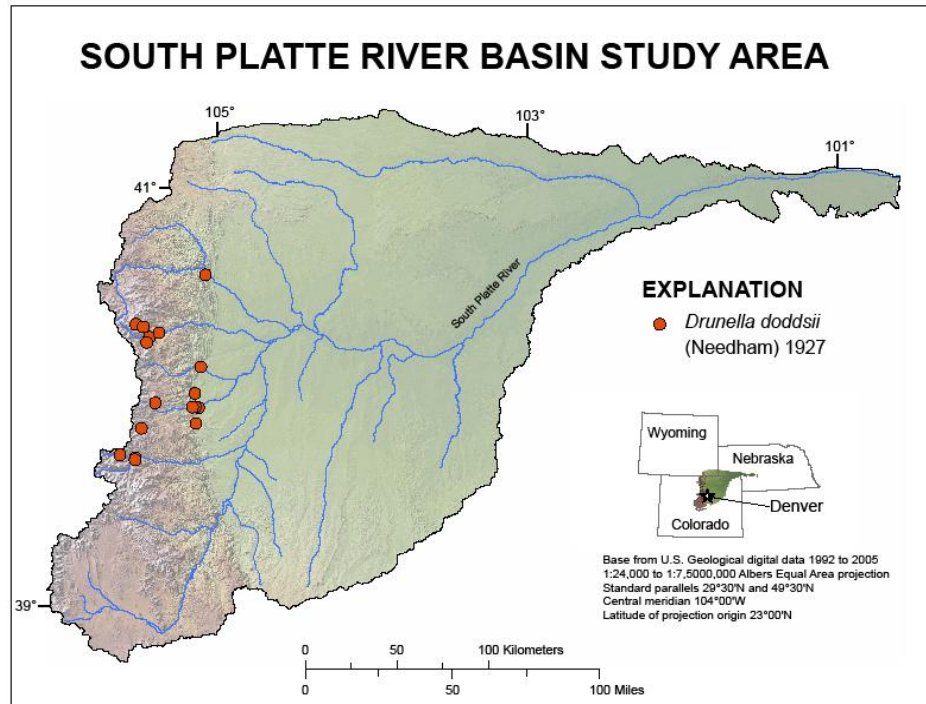
Distribution of *Caenis tardata* collections in the South Platte River Basin.



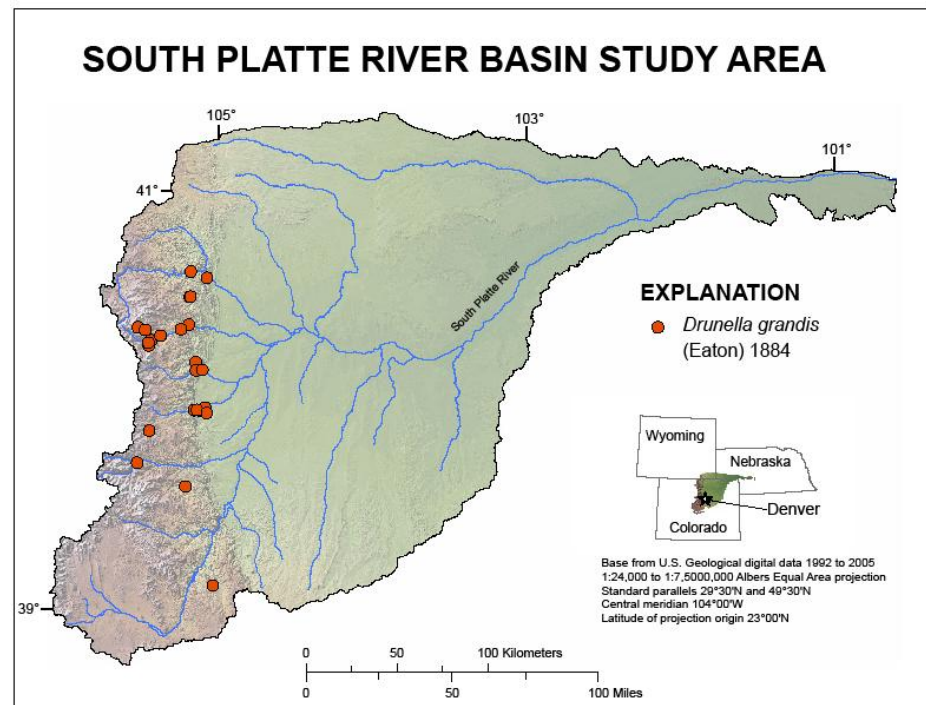
Distribution of *Attenella margarita* collections in the South Platte River Basin.



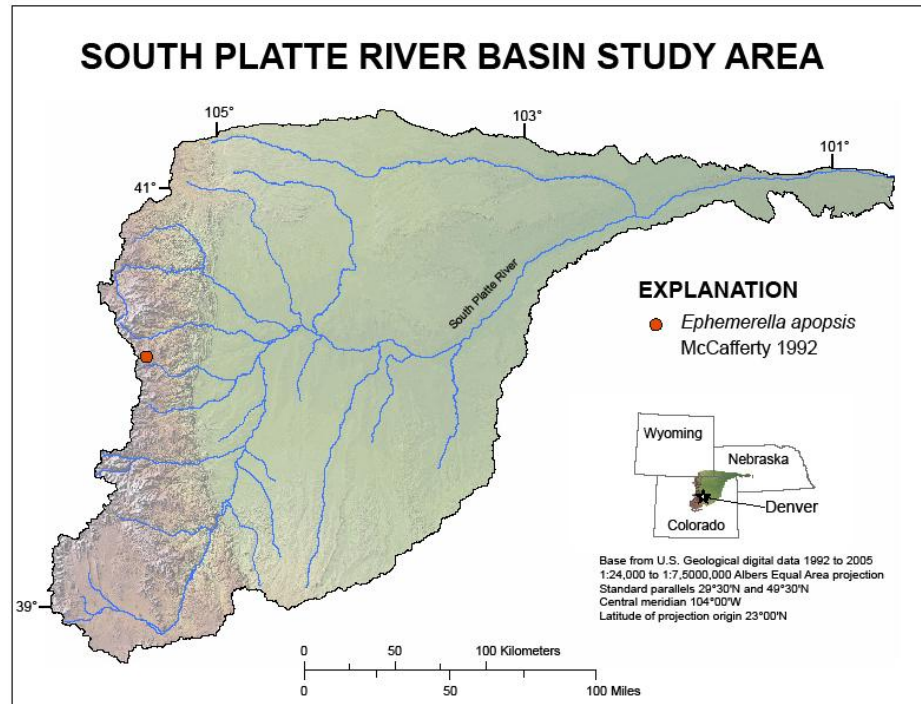
Distribution of *Drunella coloradensis* collections in the South Platte River Basin.



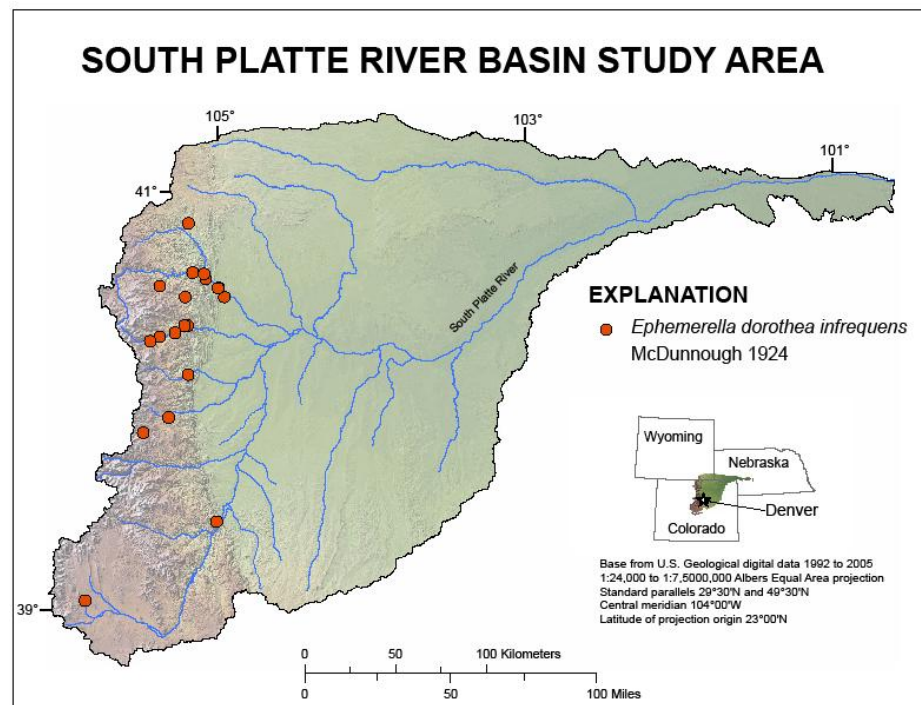
Distribution of *Drunella doddsii* collections in the South Platte River Basin.



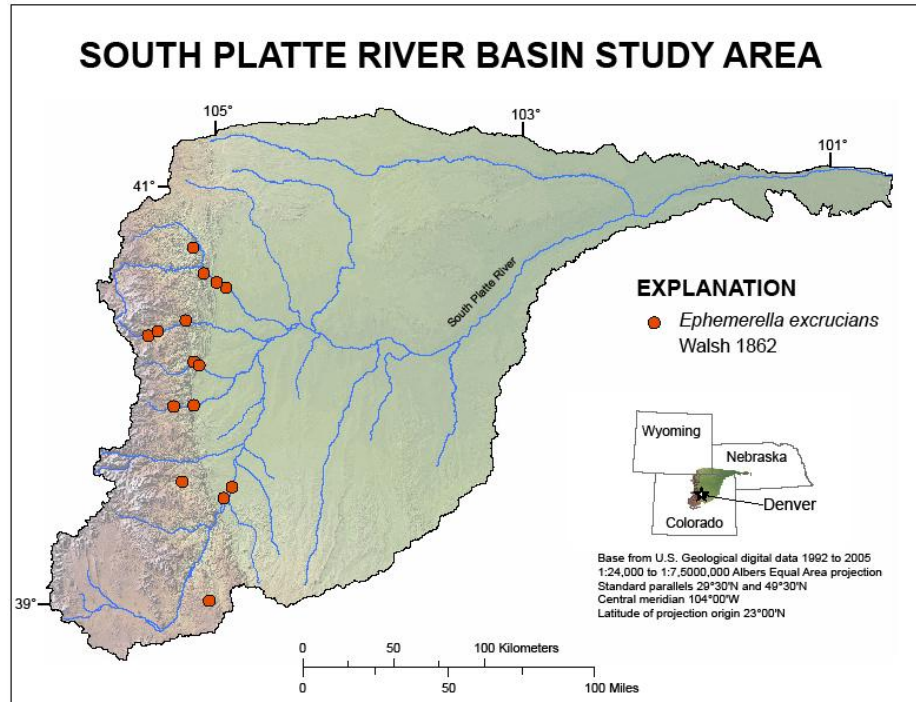
Distribution of *Drunella grandis* collections in the South Platte River Basin.



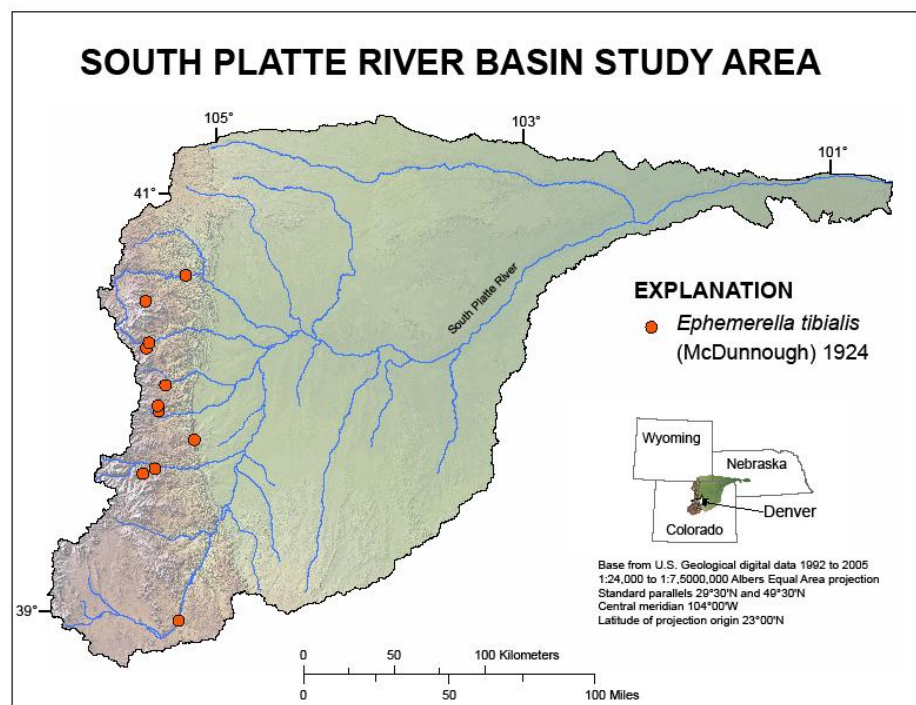
Distribution of *Ephemerella apopsis* collections in the South Platte River Basin.



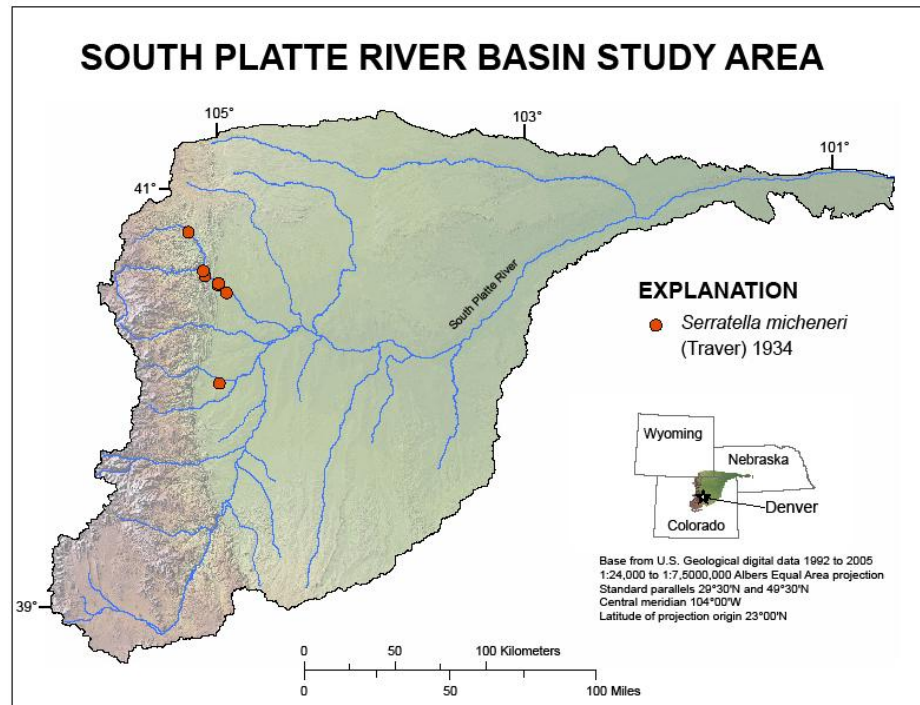
Distribution of *Ephemerella dorothea infrequens* collections in the South Platte River Basin.



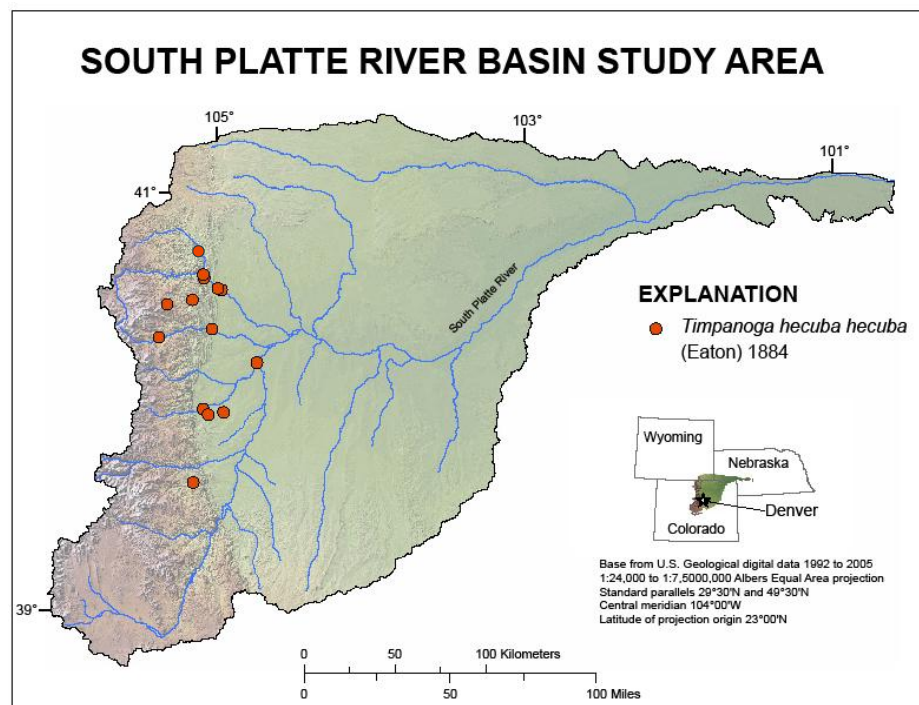
Distribution of *Ephemerella excrucians* collections in the South Platte River Basin.



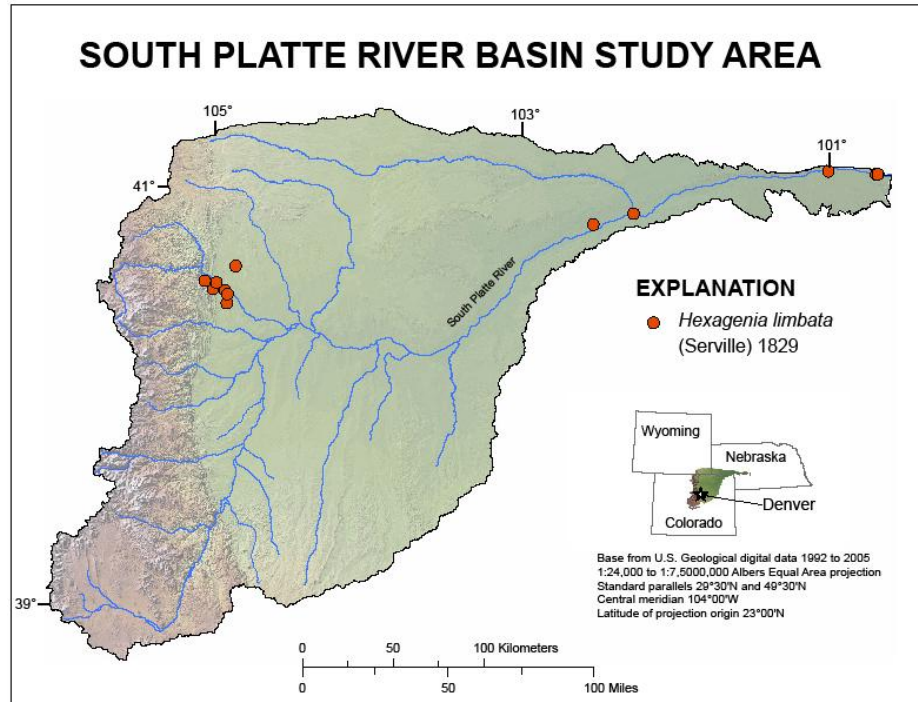
Distribution of *Ephemerella tibialis* collections in the South Platte River Basin.



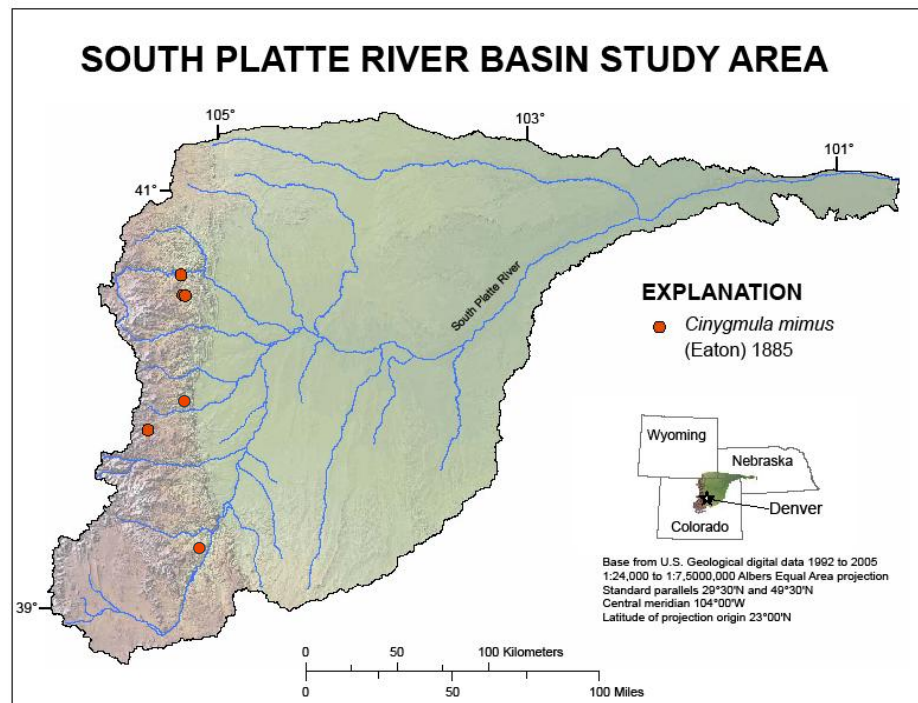
Distribution of *Serratella micheneri* collections in the South Platte River Basin.



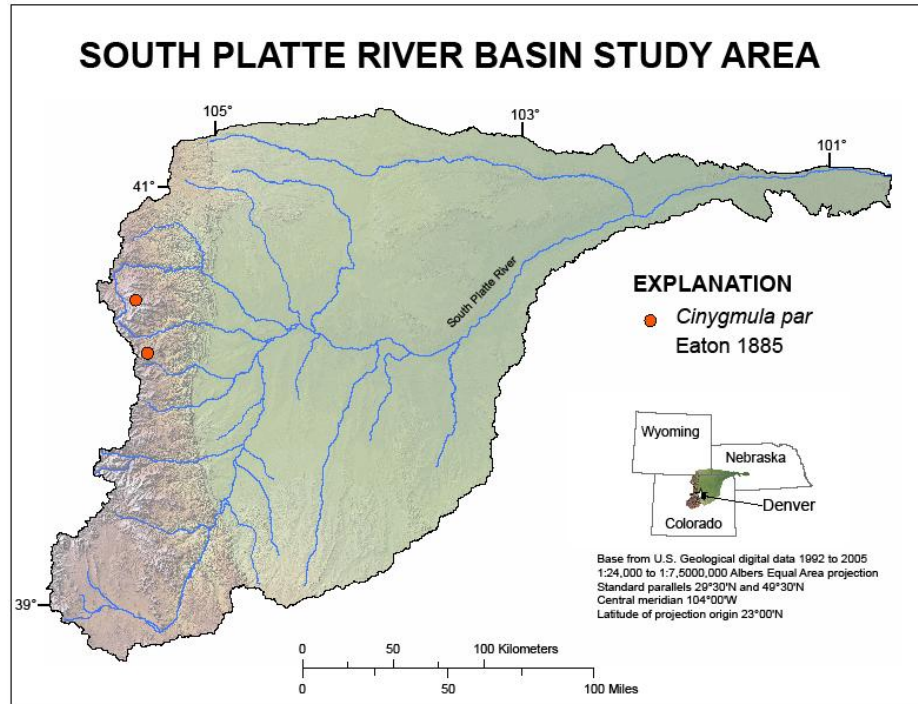
Distribution of *Timpanoga hecuba hecuba* collections in the South Platte River Basin.



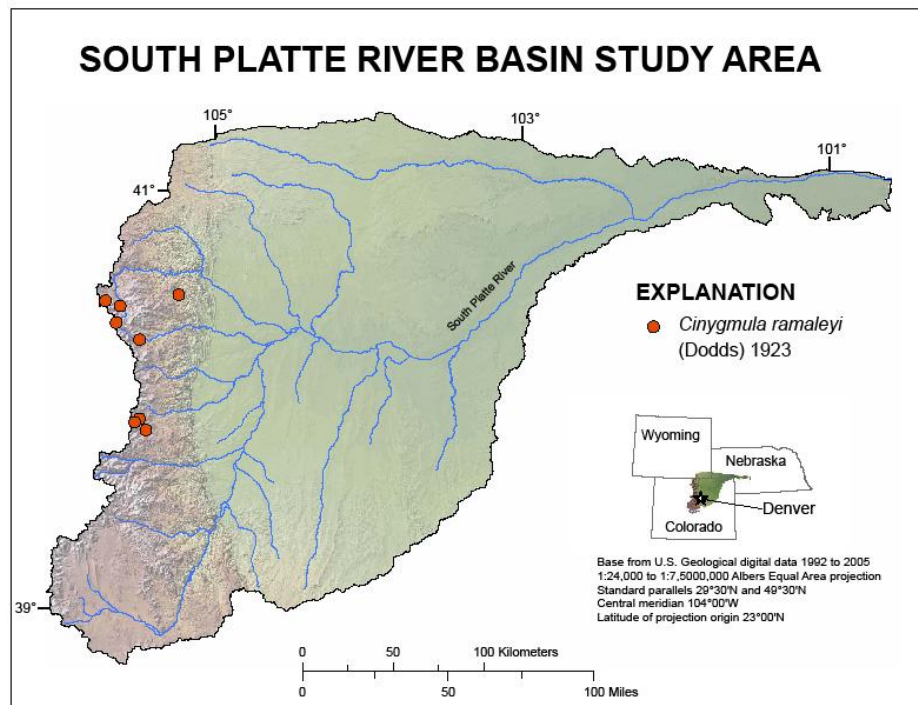
Distribution of *Hexagenia limbata* collections in the South Platte River Basin.



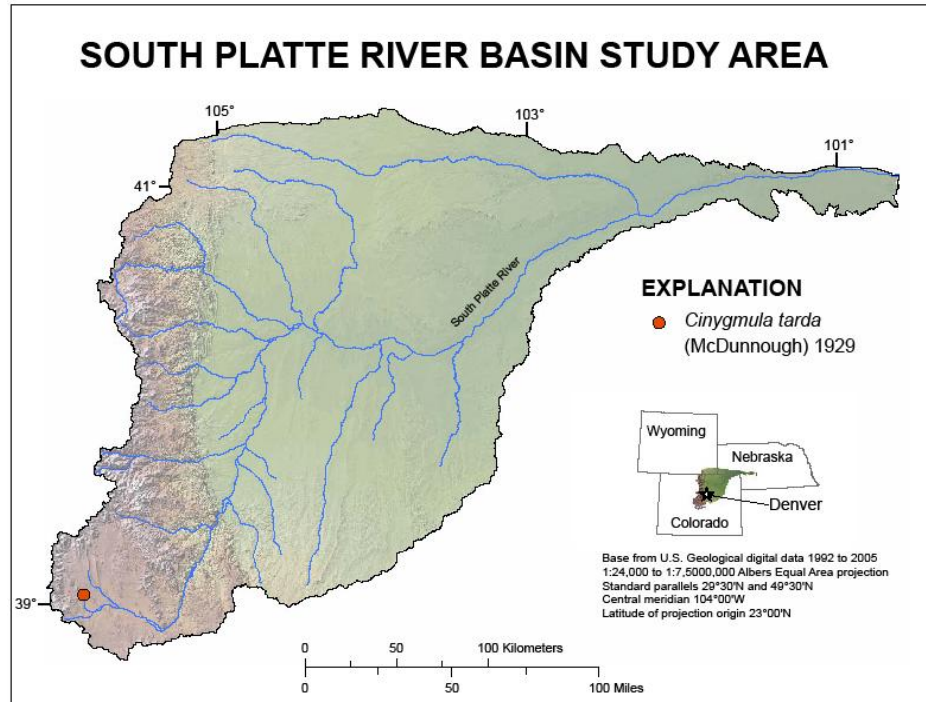
Distribution of *Cinygmula mimus* collections in the South Platte River Basin.



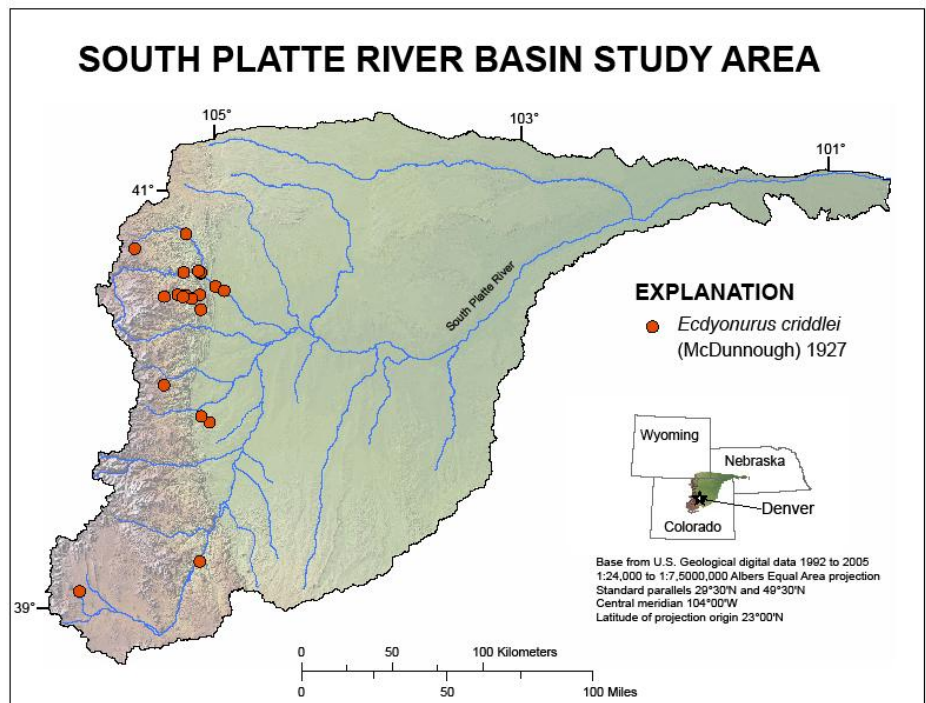
Distribution of *Cinygmula par* collections in the South Platte River Basin.



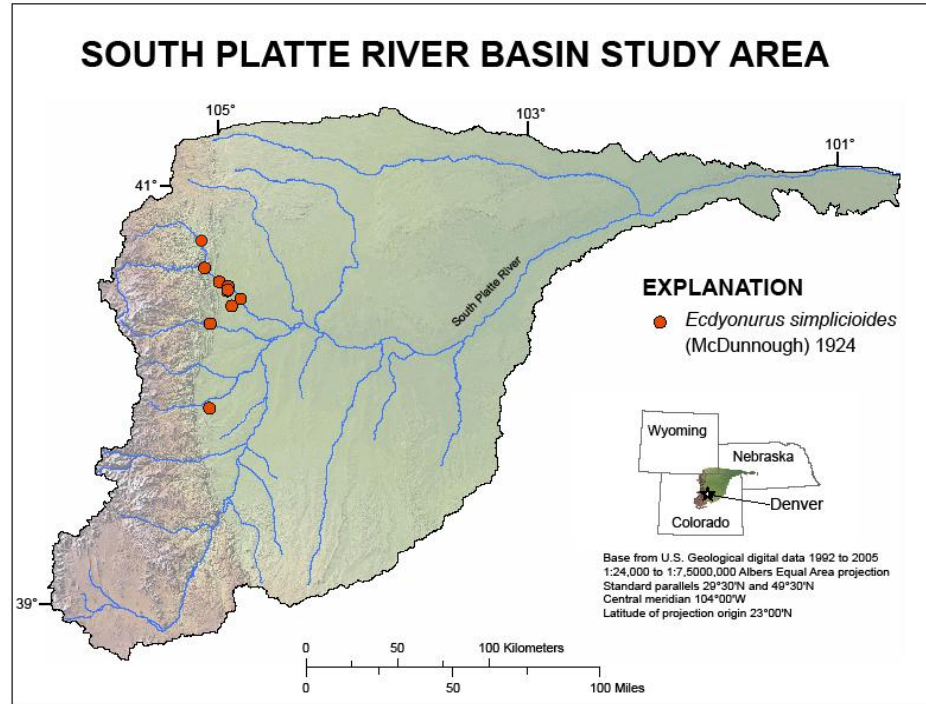
Distribution of *Cinygmula ramaleyi* collections in the South Platte River Basin.



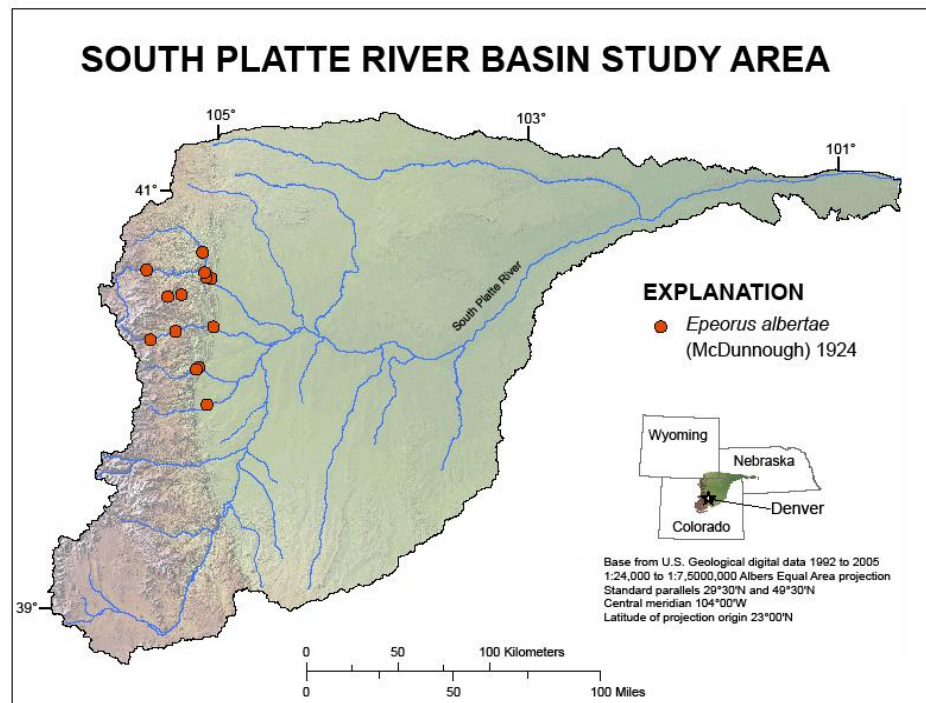
Distribution of *Cinygmula tarda* collections in the South Platte River Basin.



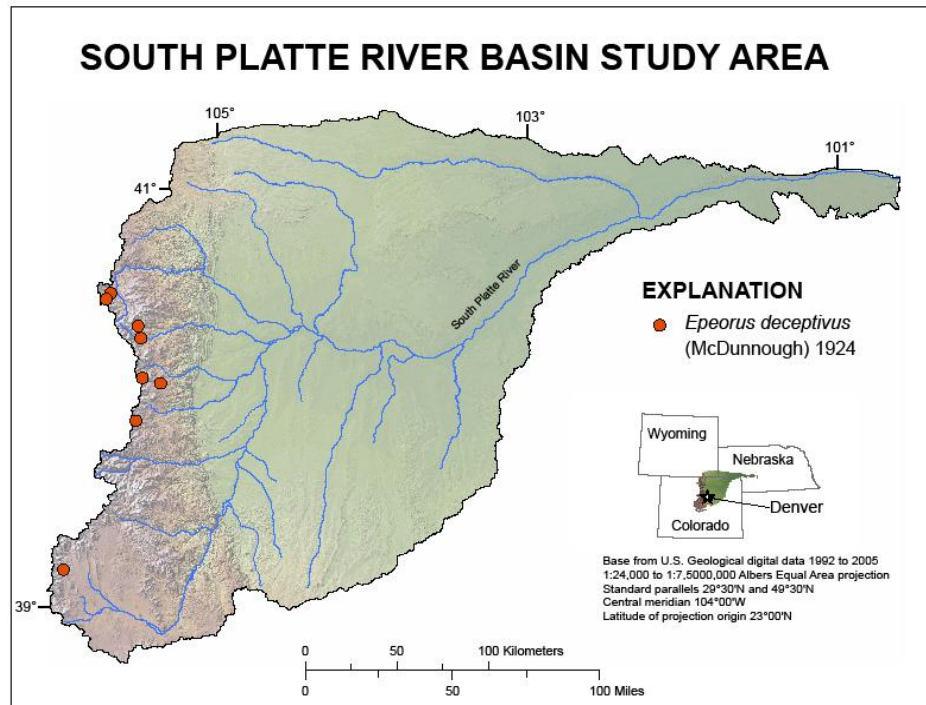
Distribution of *Ecdyonurus criddlei* collections in the South Platte River Basin.



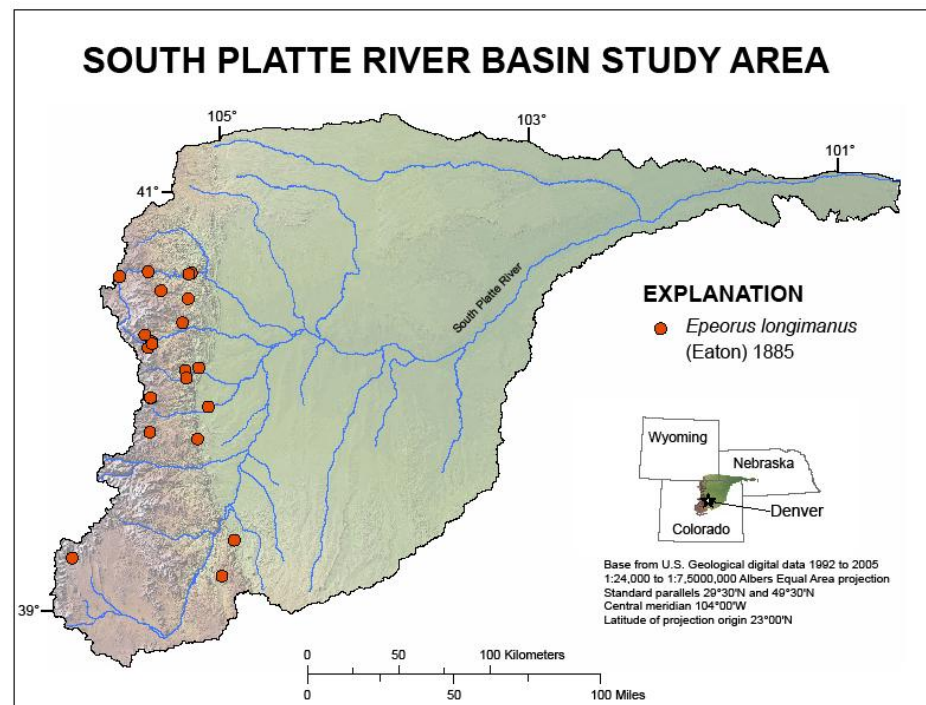
Distribution of *Ecdyonurus simplicioides* collections in the South Platte River Basin.



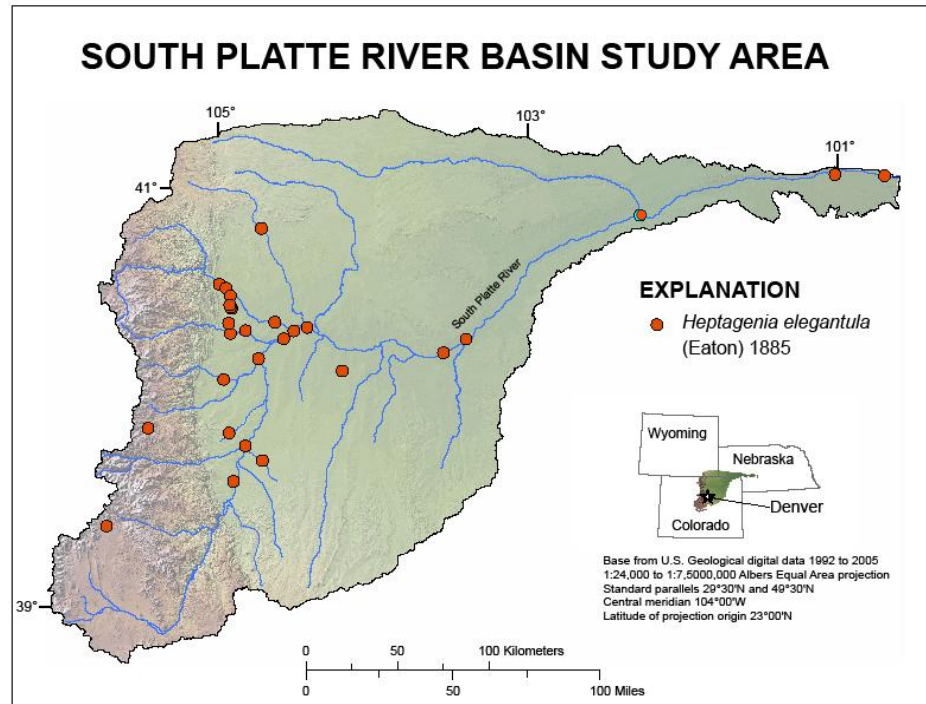
Distribution of *Epeorus albertae* collections in the South Platte River Basin.



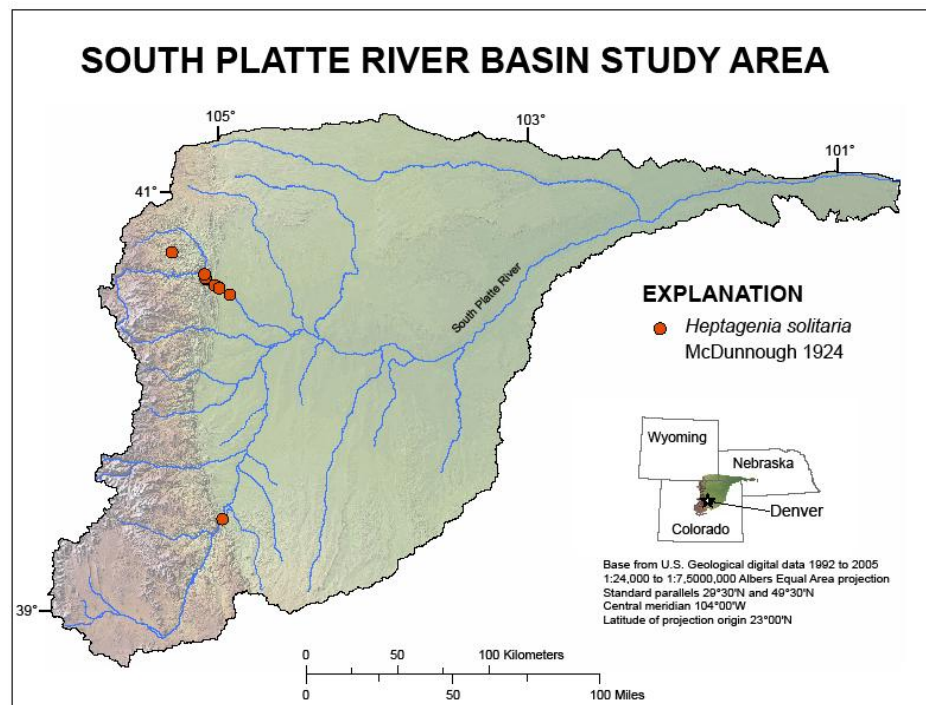
Distribution of *Epeorus deceptiveus* collections in the South Platte River Basin.



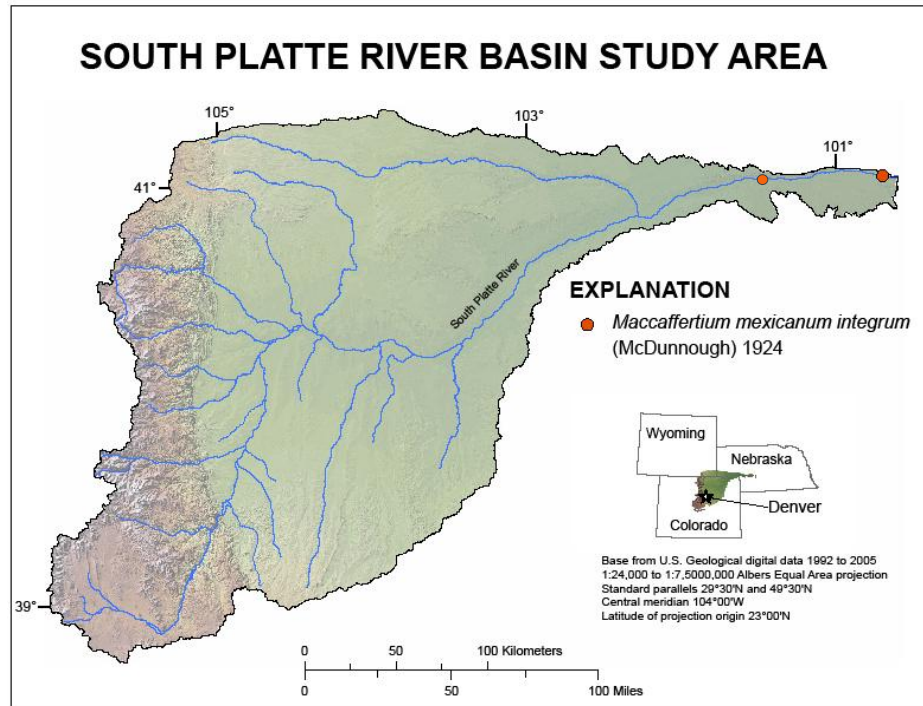
Distribution of *Epeorus longimanus* collections in the South Platte River Basin.



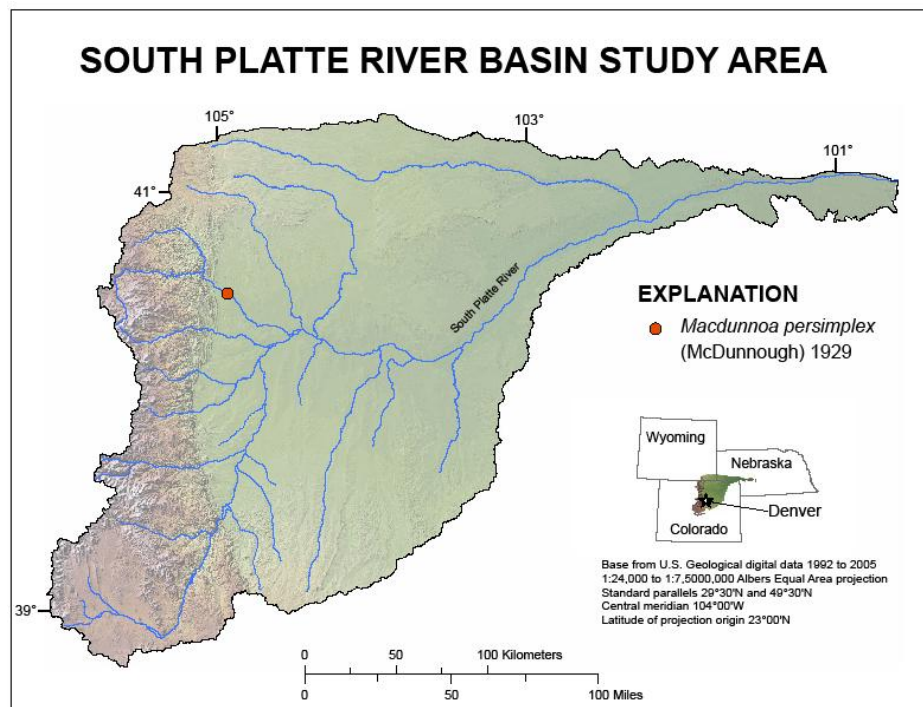
Distribution of *Heptagenia elegantula* collections in the South Platte River Basin.



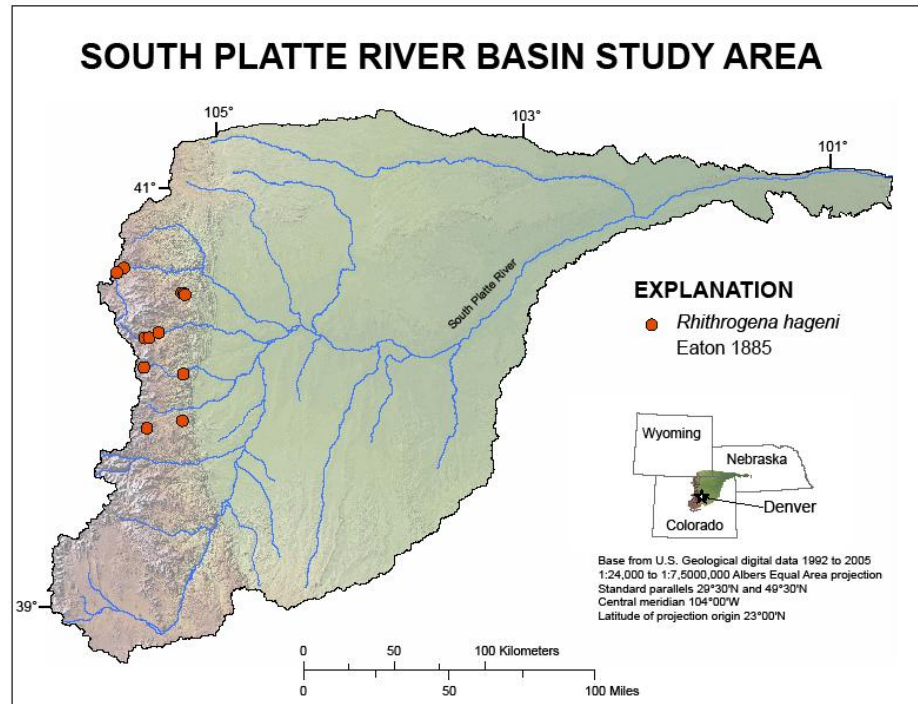
Distribution of *Heptagenia solitaria* collections in the South Platte River Basin.



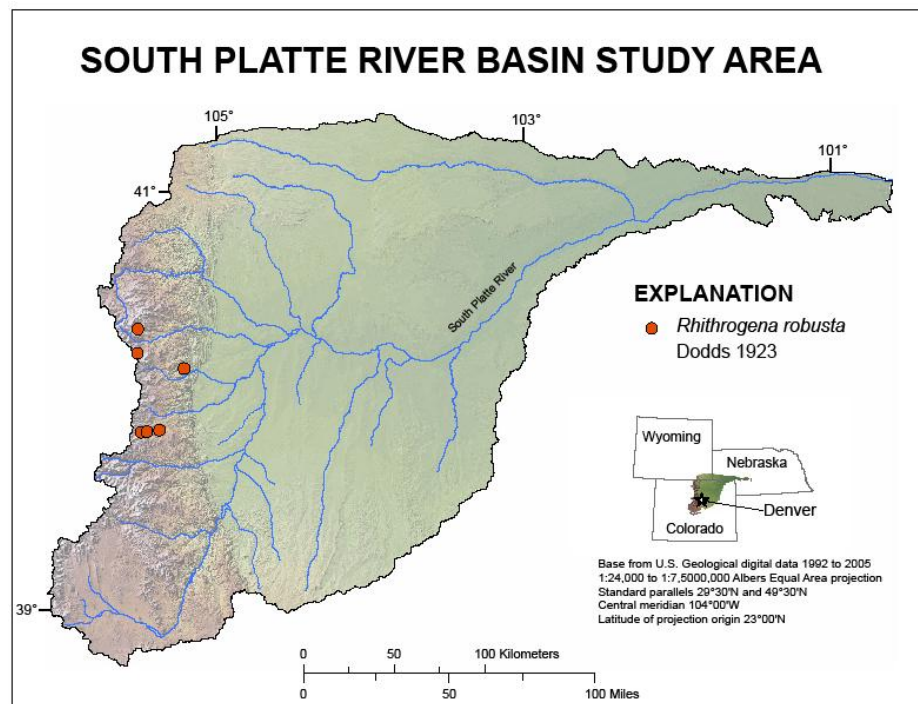
Distribution of *Maccaffertium mexicanum integrum* collections in the South Platte River Basin.



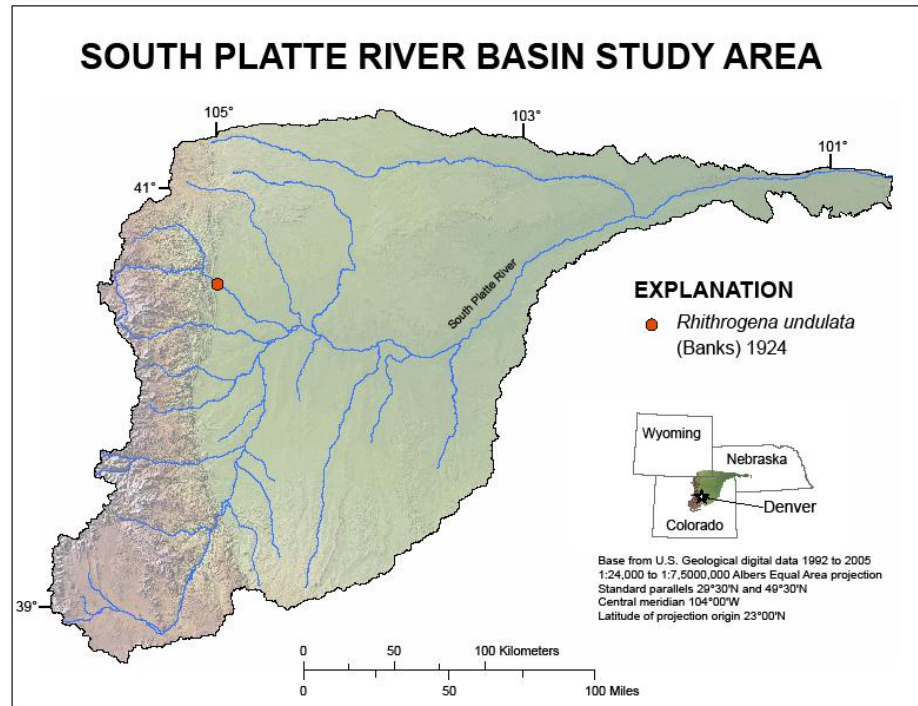
Distribution of *Macdunnoa persimplex* collections in the South Platte River Basin.



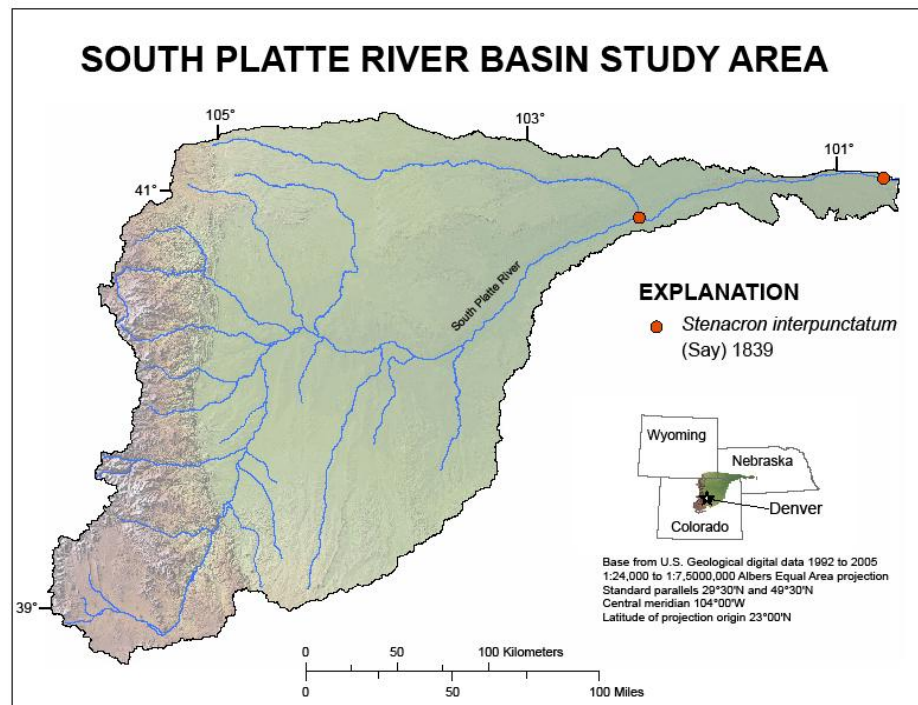
Distribution of *Rhithrogena hageni* collections in the South Platte River Basin.



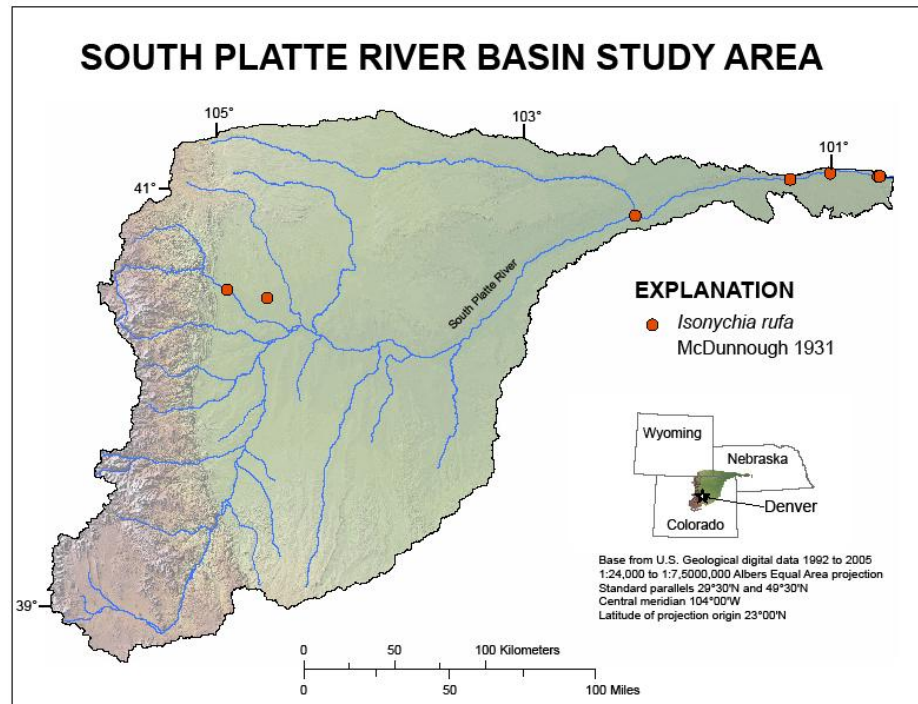
Distribution of *Rhithrogena robusta* collections in the South Platte River Basin.



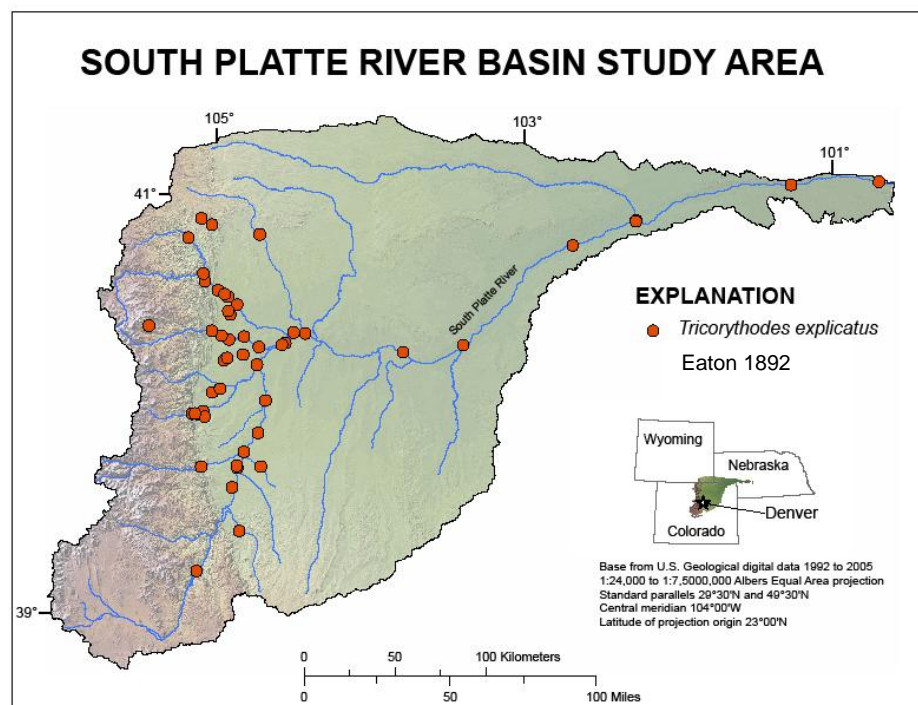
Distribution of *Rhithrogena undulata* collections in the South Platte River Basin.



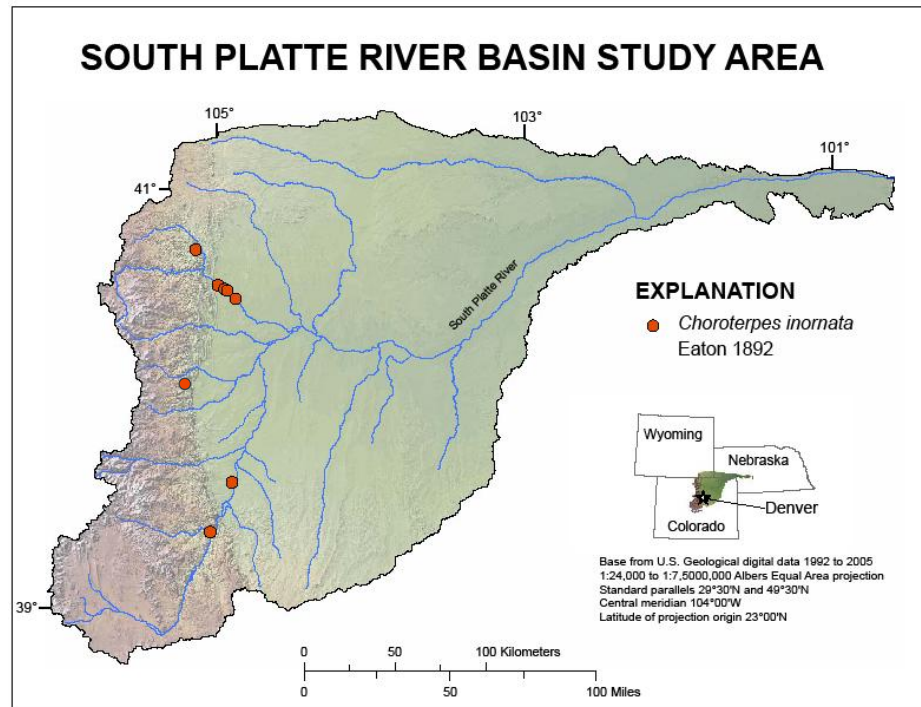
Distribution of *Stenacron interpunctatum* collections in the South Platte River Basin.



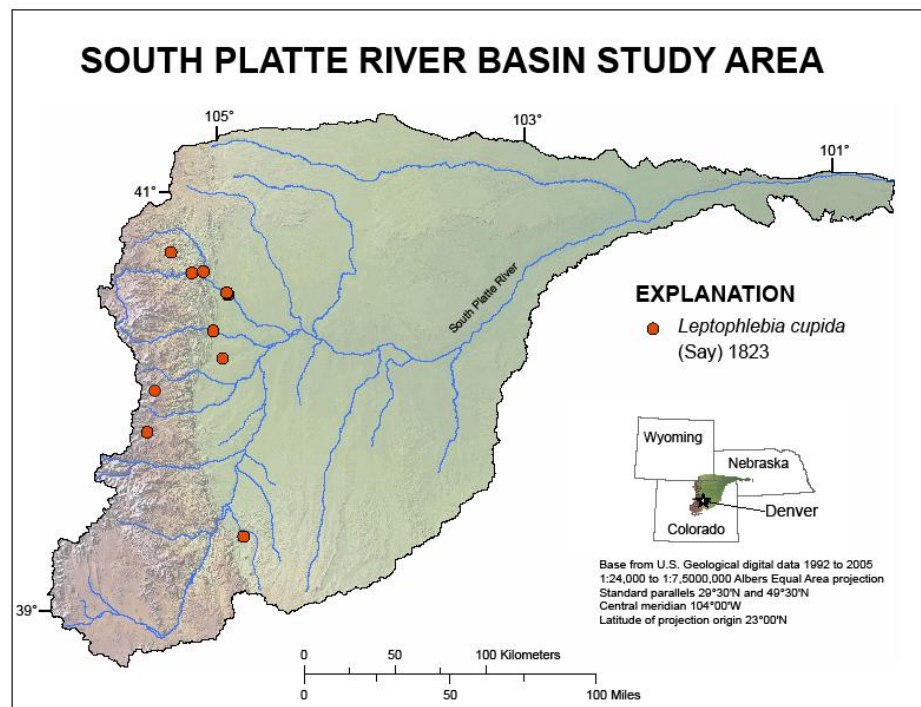
Distribution of *Isonychia rufa* collections in the South Platte River Basin.



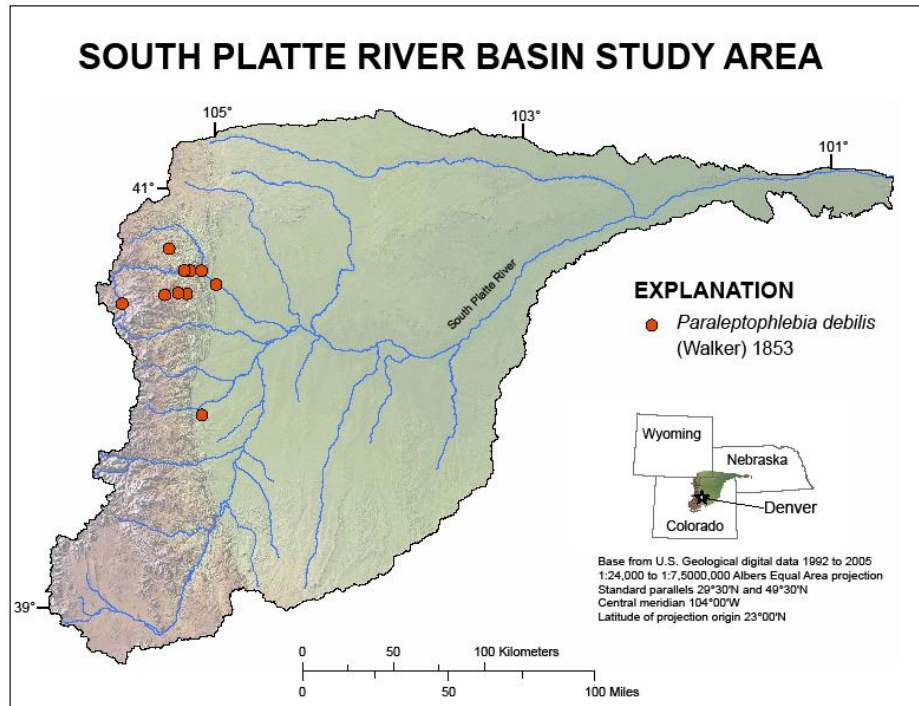
Distribution of *Tricorythodes explicatus* collections in the South Platte River Basin.



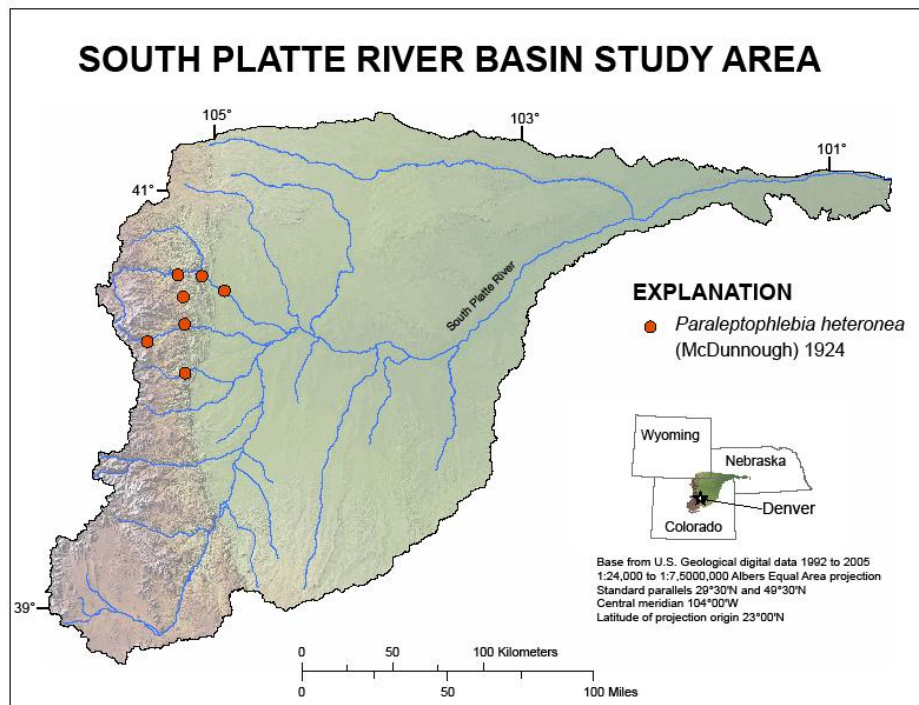
Distribution of *Choroterpes inornata* collections in the South Platte River Basin.



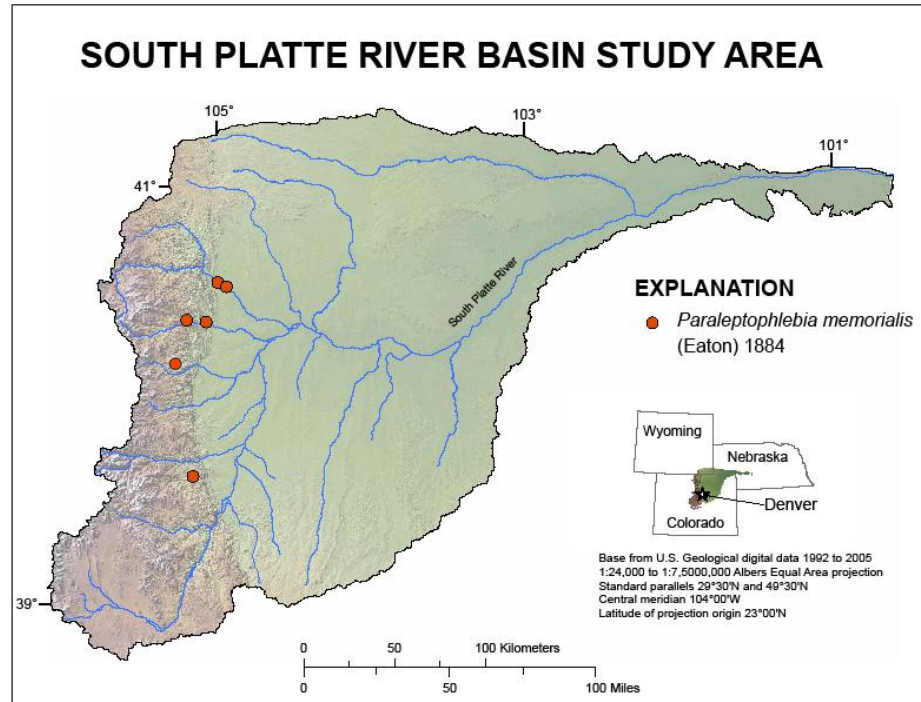
Distribution of *Leptophlebia cupida* collections in the South Platte River Basin.



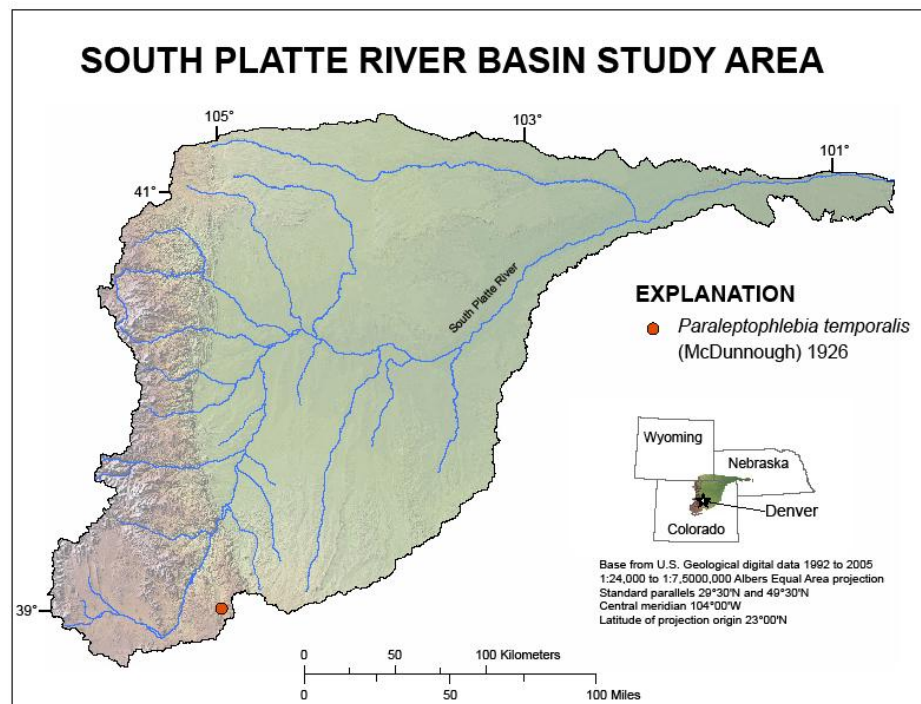
Distribution of *Paraleptophlebia debilis* collections in the South Platte River Basin.



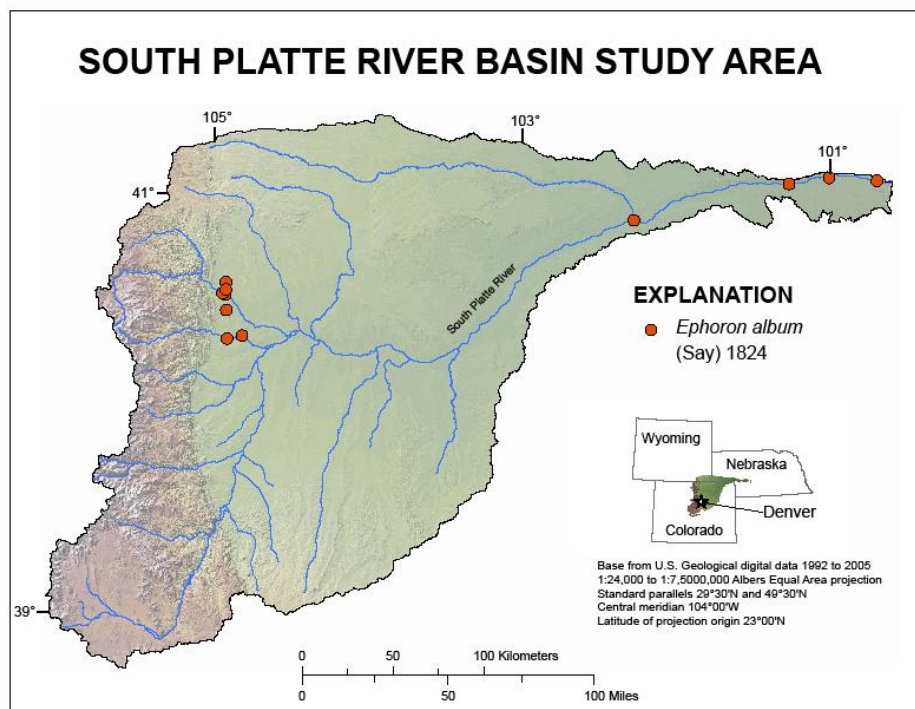
Distribution of *Paraleptophlebia heteronea* collections in the South Platte River Basin.



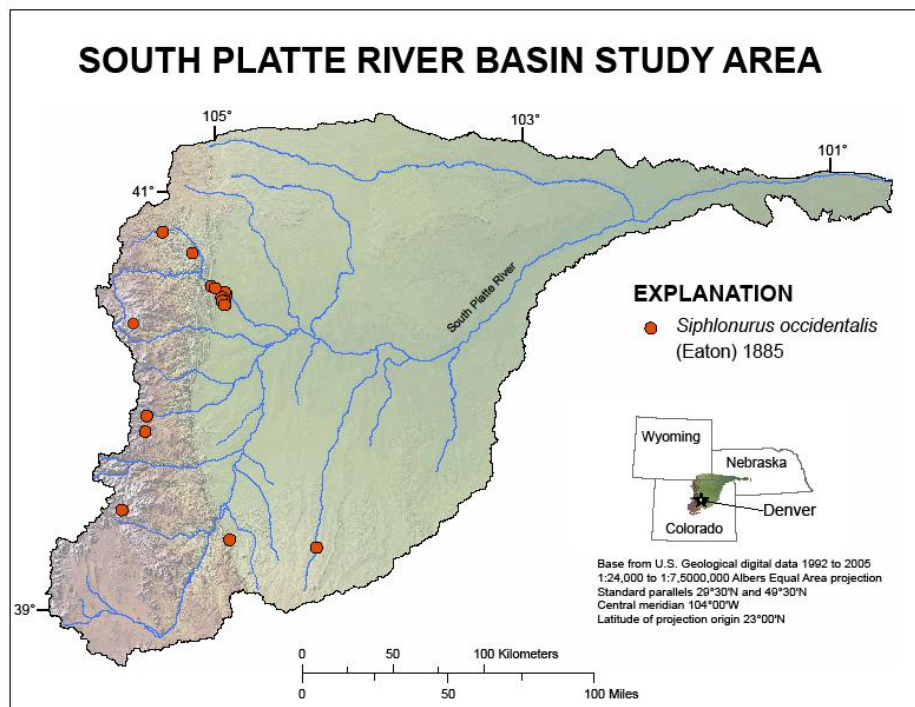
Distribution of *Paraleptophlebia memorialis* collections in the South Platte River Basin.



Distribution of *Paraleptophlebia temporalis* collections in the South Platte River Basin.



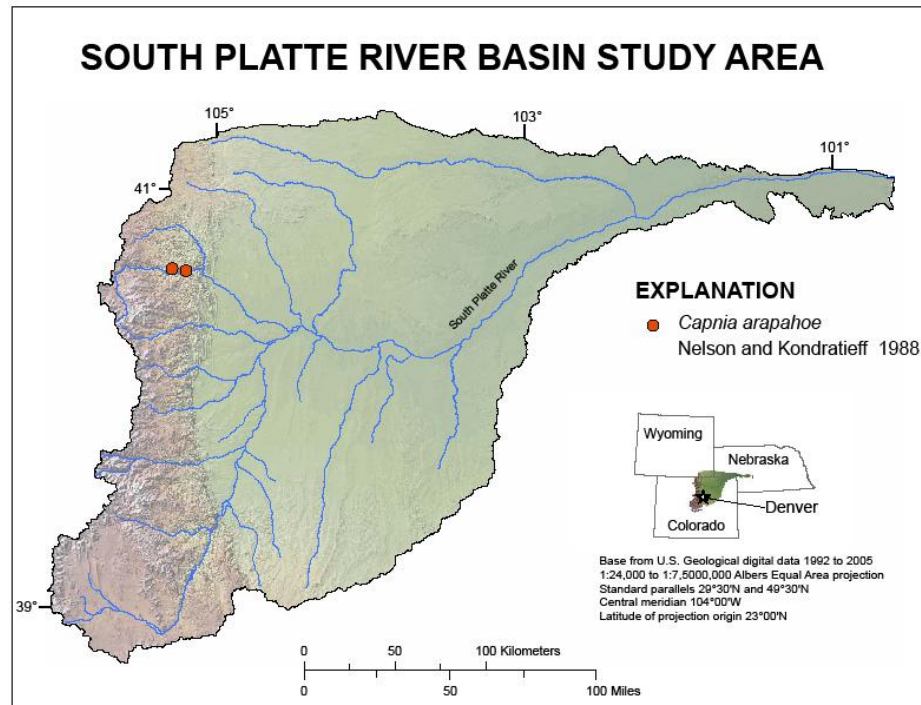
Distribution of *Ephoron album* collections in the South Platte River Basin.



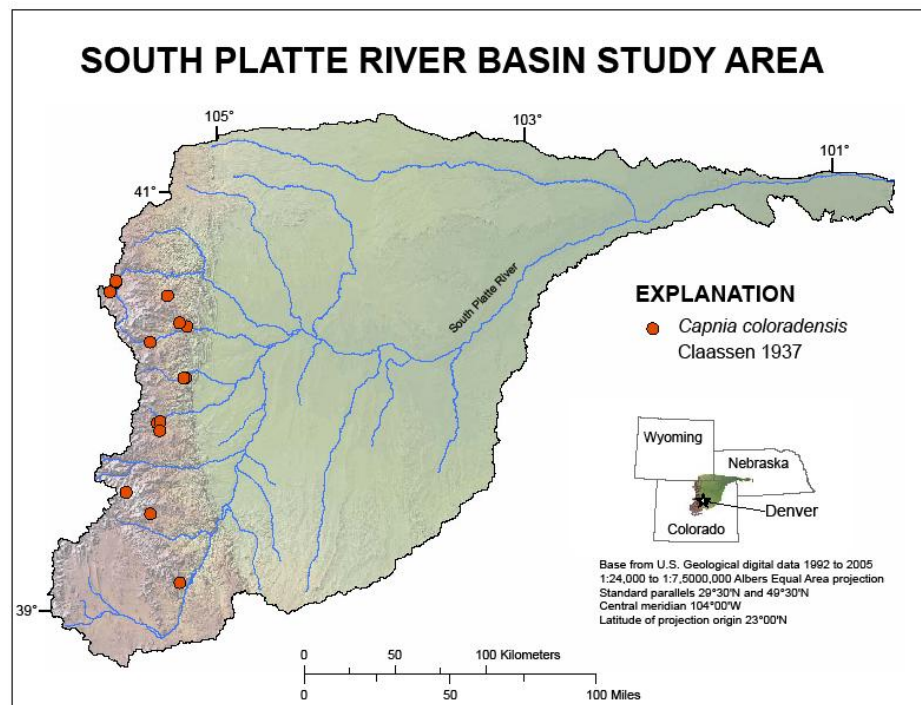
Distribution of *Siphonurus occidentalis* collections in the South Platte River Basin.

Appendix B

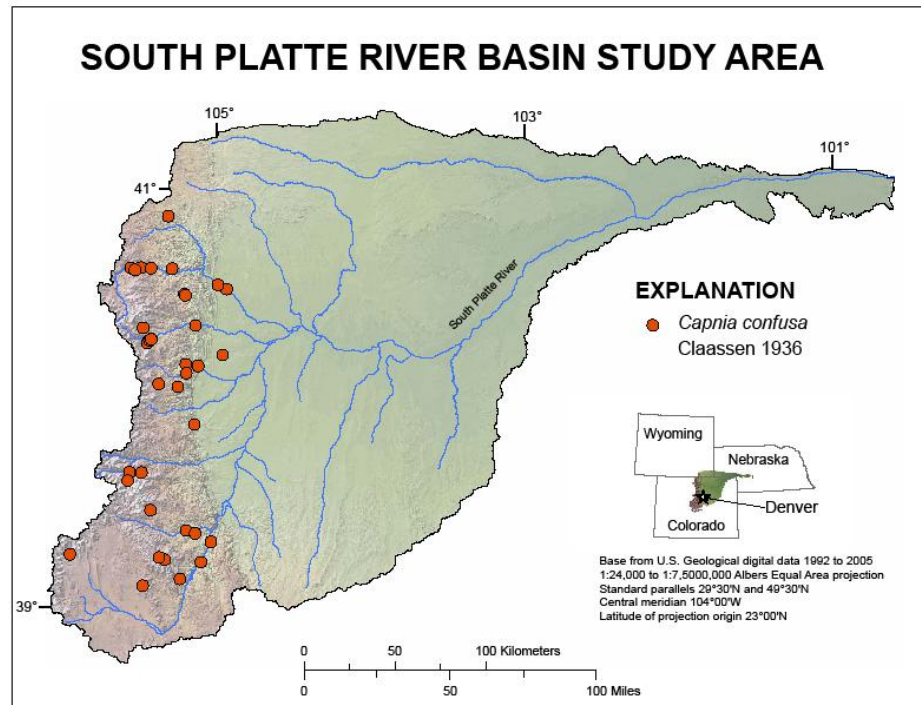
Stonefly Distribution Maps



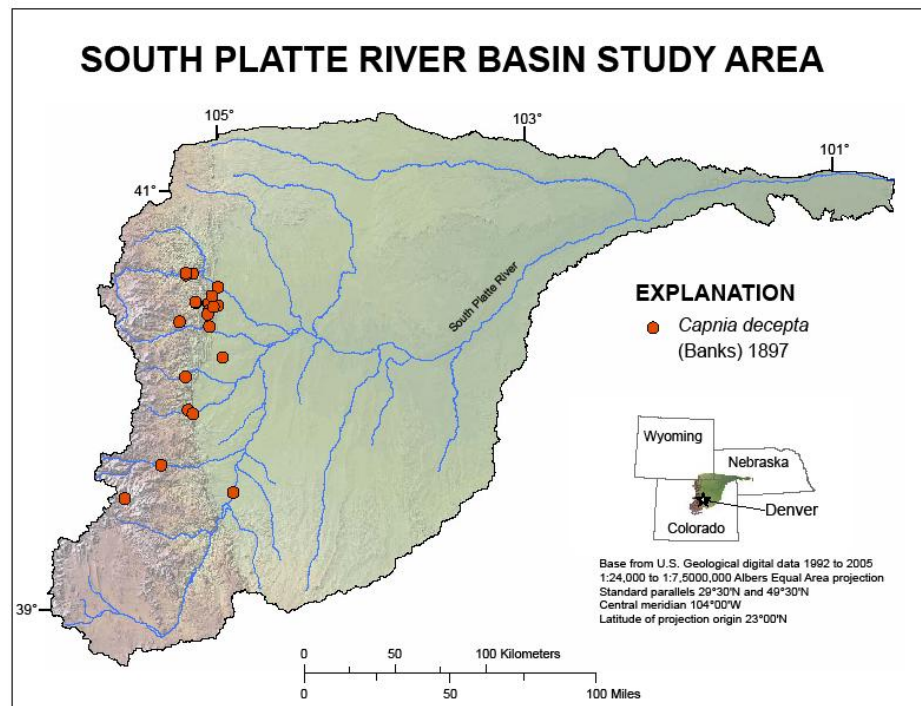
Distribution of *Capnia arapahoe* collections in the South Platte River Basin.



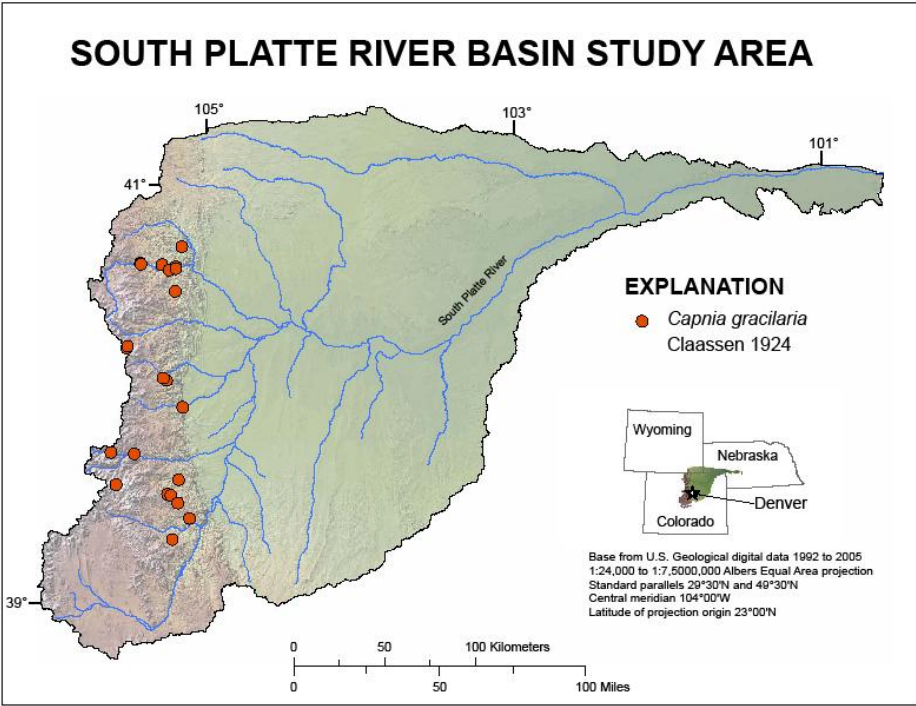
Distribution of *Capnia coloradensis* collections in the South Platte River Basin.



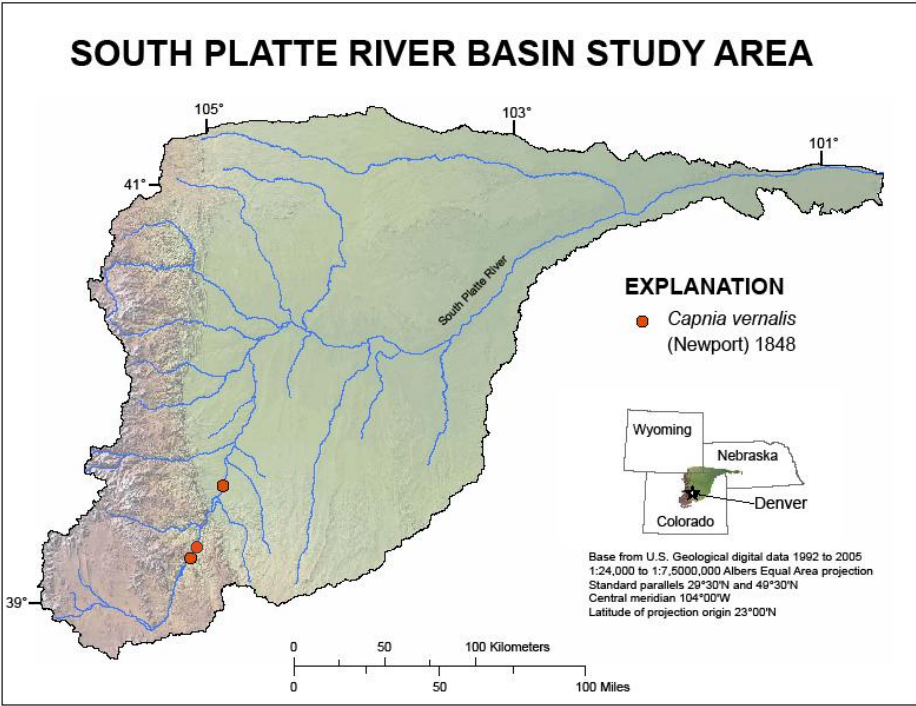
Distribution of *Capnia confusa* collections in the South Platte River Basin.



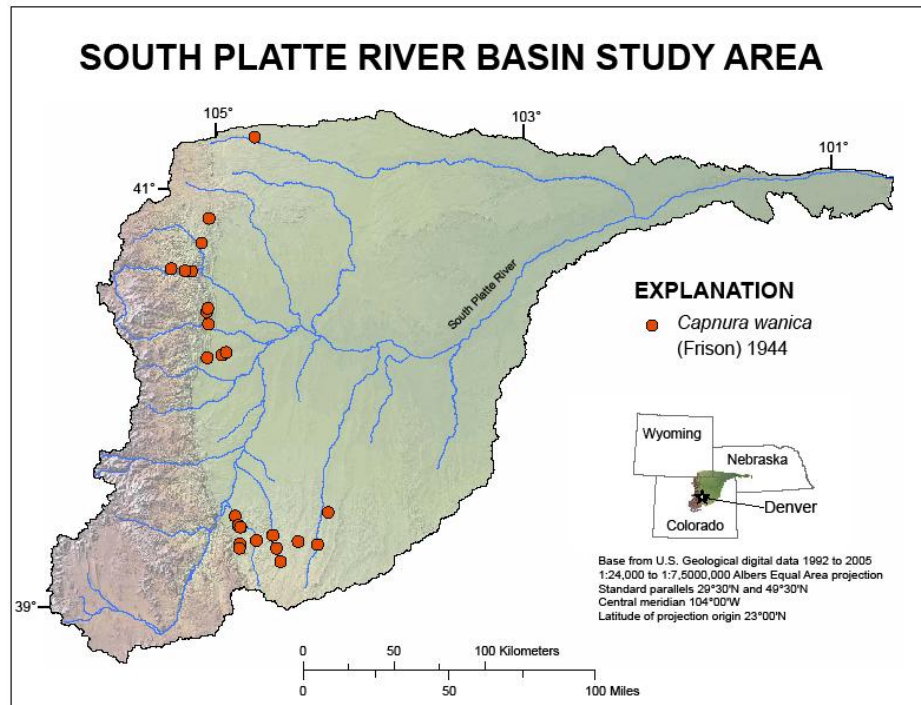
Distribution of *Capnia decepta* collections in the South Platte River Basin.



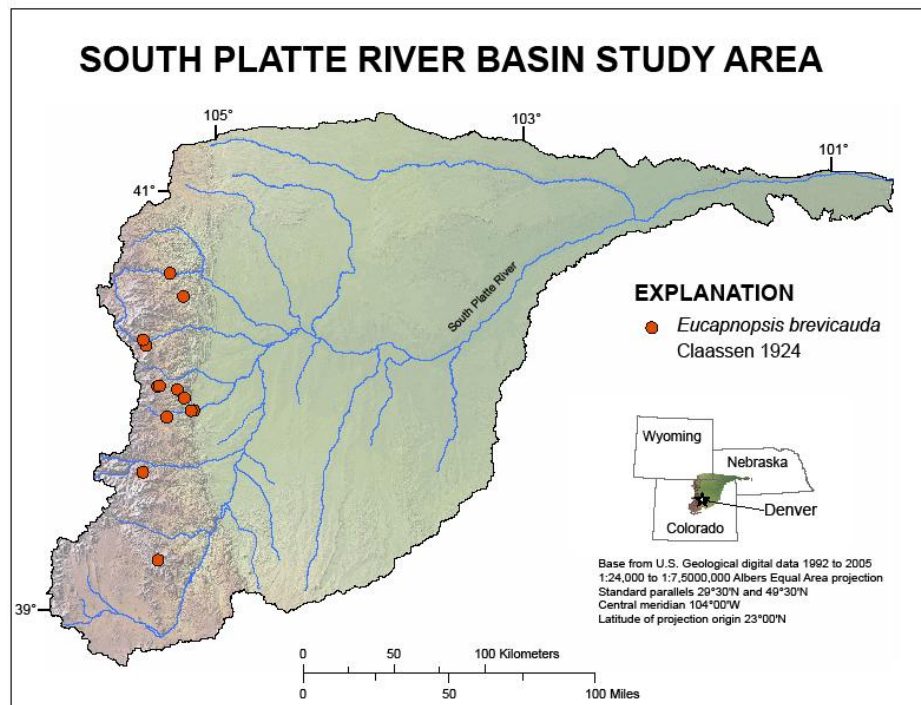
Distribution of *Capnia gracilaria* collections in the South Platte River Basin.



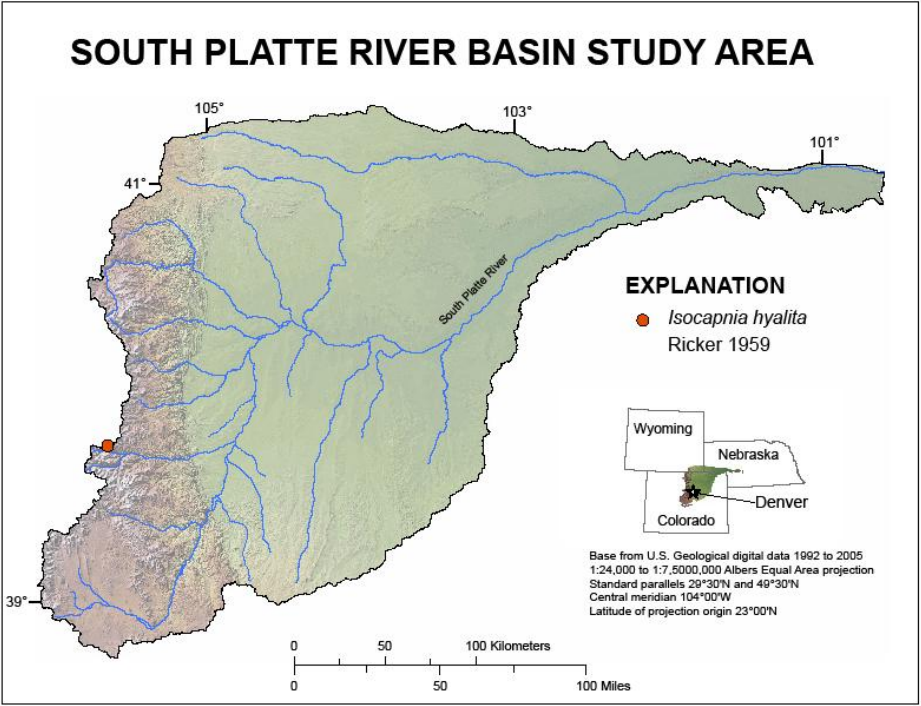
Distribution of *Capnia vernalis* collections in the South Platte River Basin.



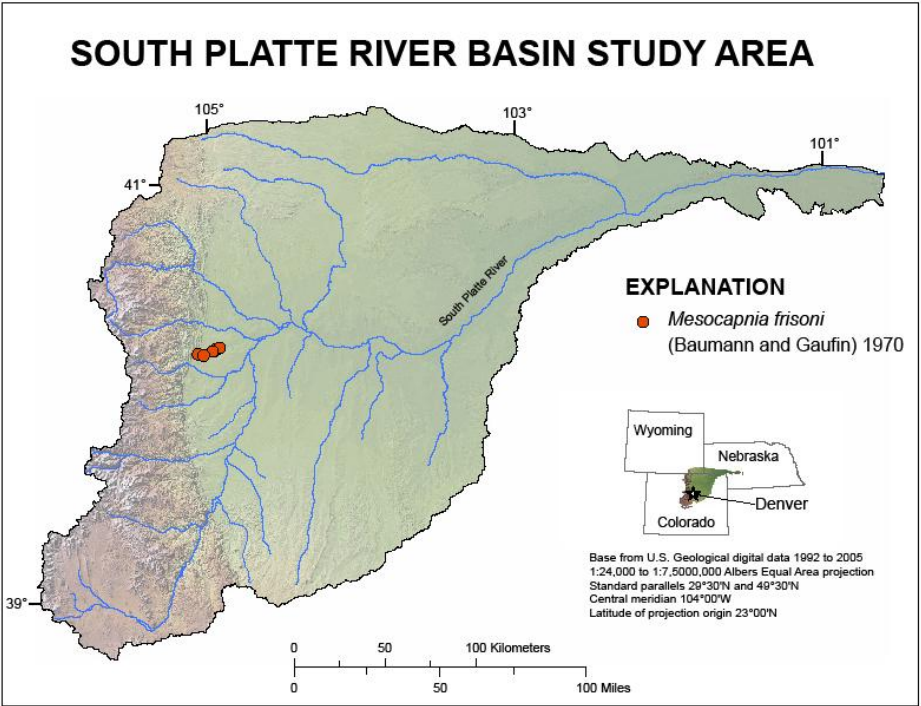
Distribution of *Capnura wanica* collections in the South Platte River Basin.



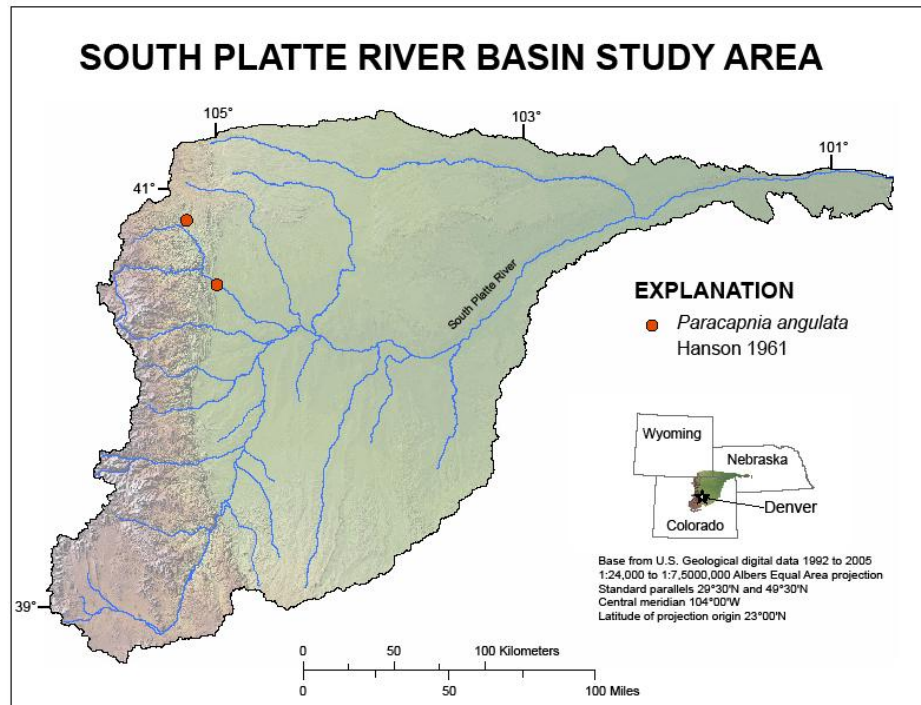
Distribution of *Eucapnopsis brevicauda* collections in the South Platte River Basin.



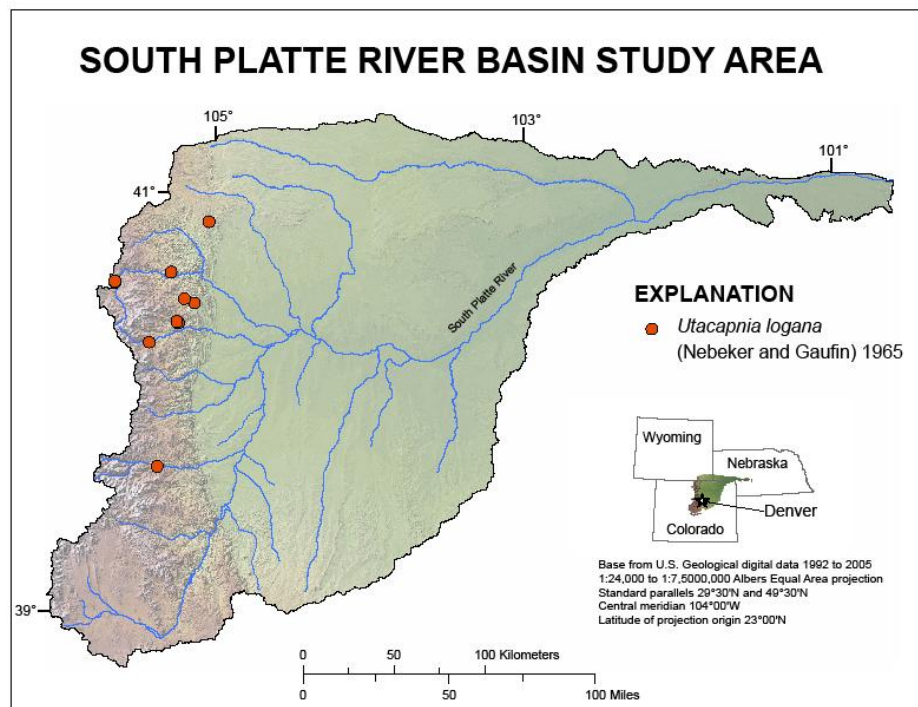
Distribution of *Isocapnia hyalita* collections in the South Platte River Basin.



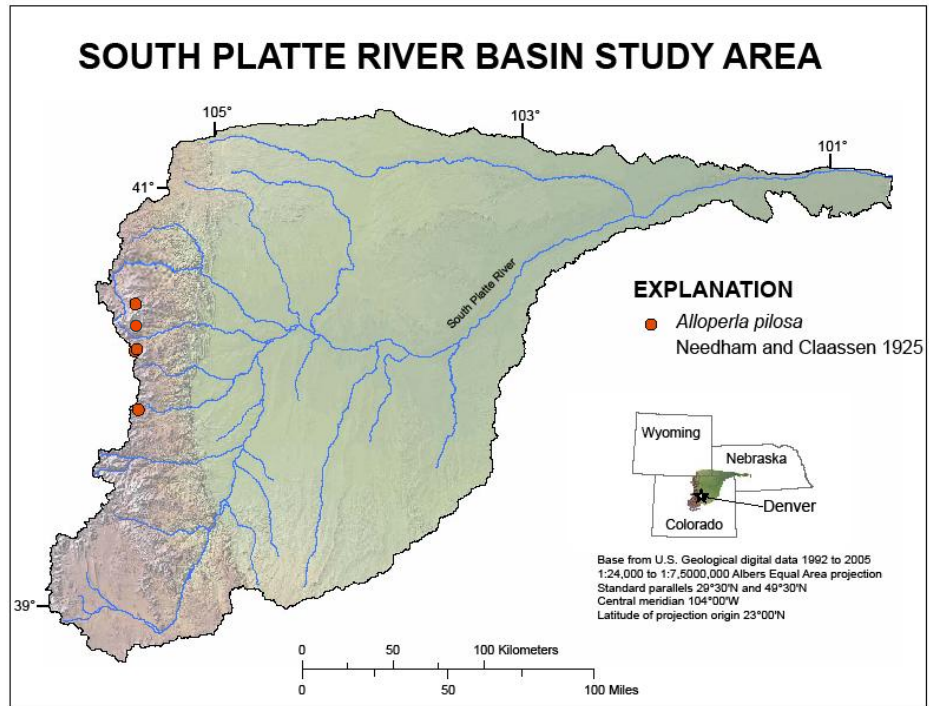
Distribution of *Mesocapnia frisoni* collections in the South Platte River Basin.



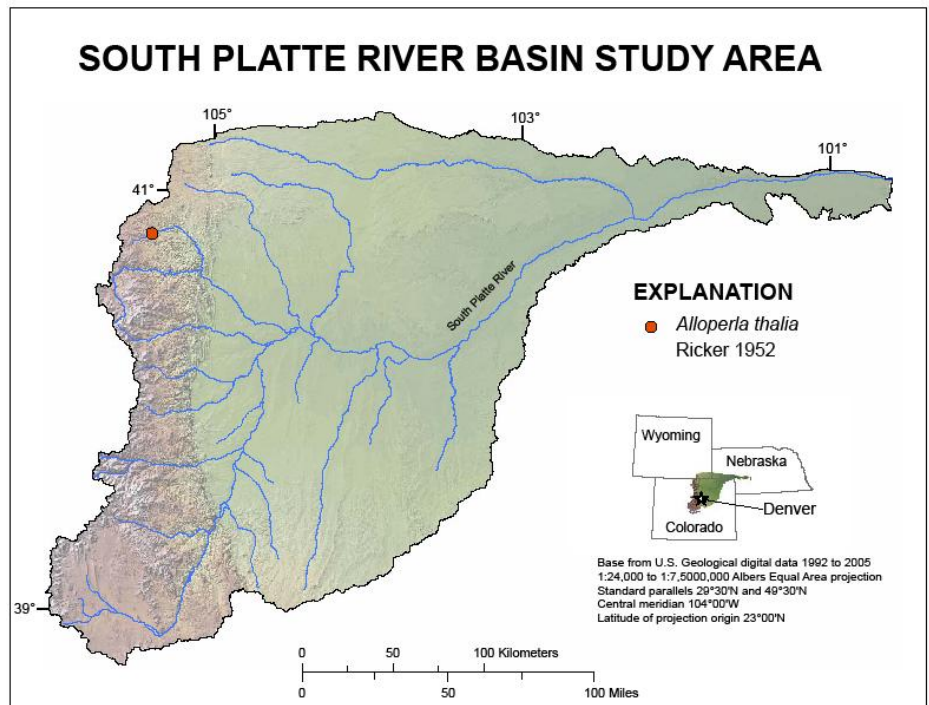
Distribution of *Paracapnia angulata* collections in the South Platte River Basin.



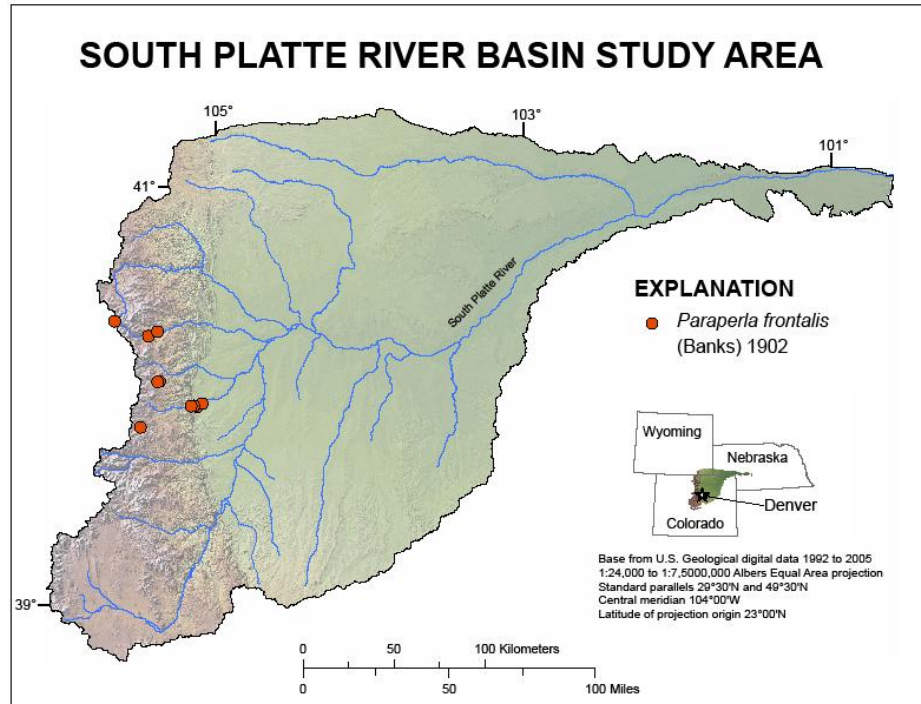
Distribution of *Utacapnia logana* collections in the South Platte River Basin.



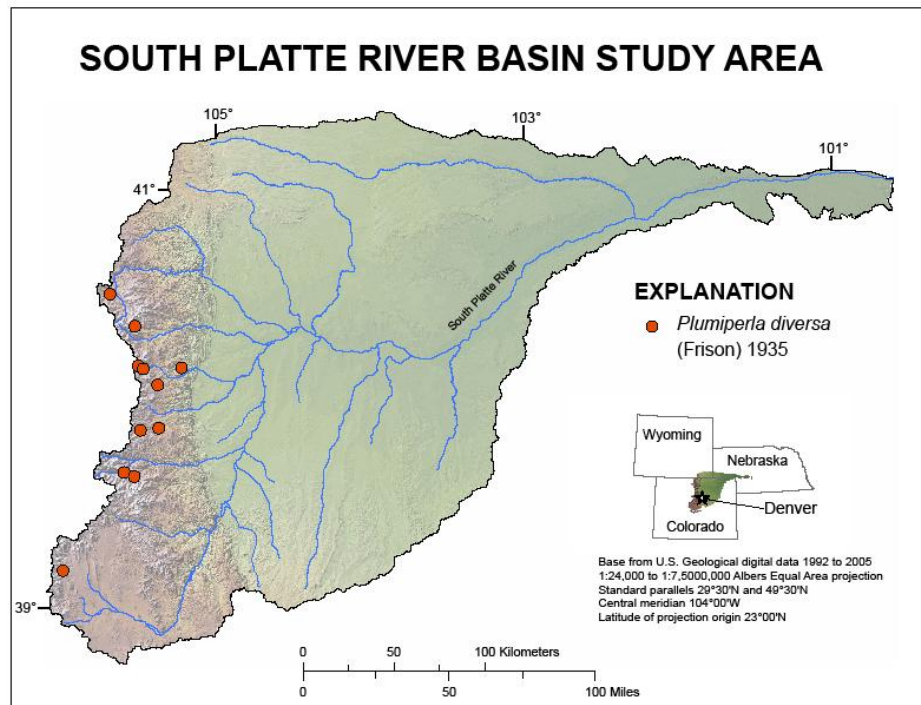
Distribution of *Alloverla pilosa* collections in the South Platte River Basin.



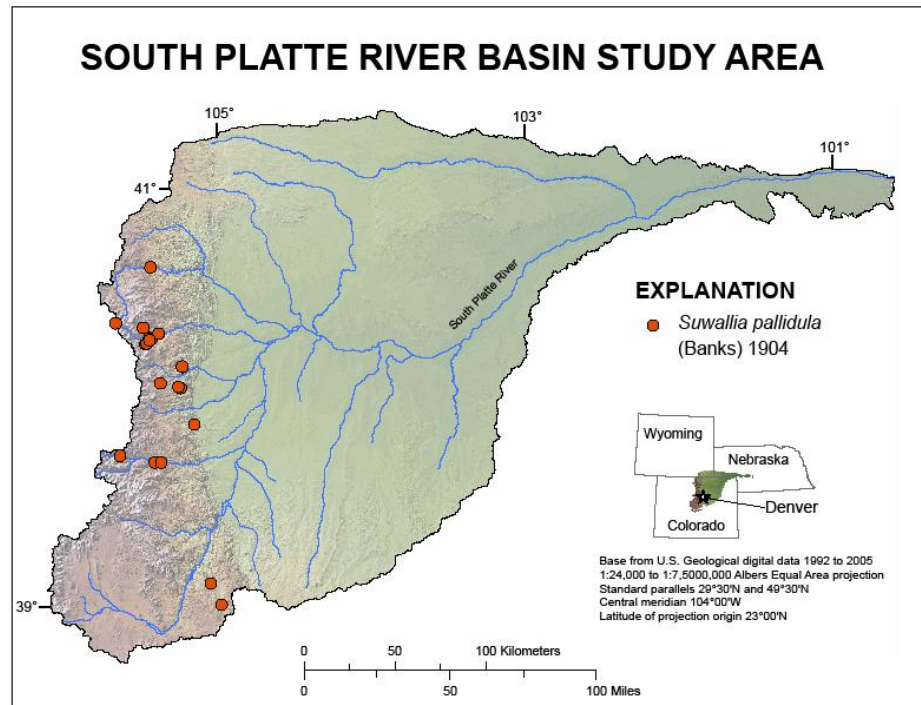
Distribution of *Alloverla thalia* collections in the South Platte River Basin.



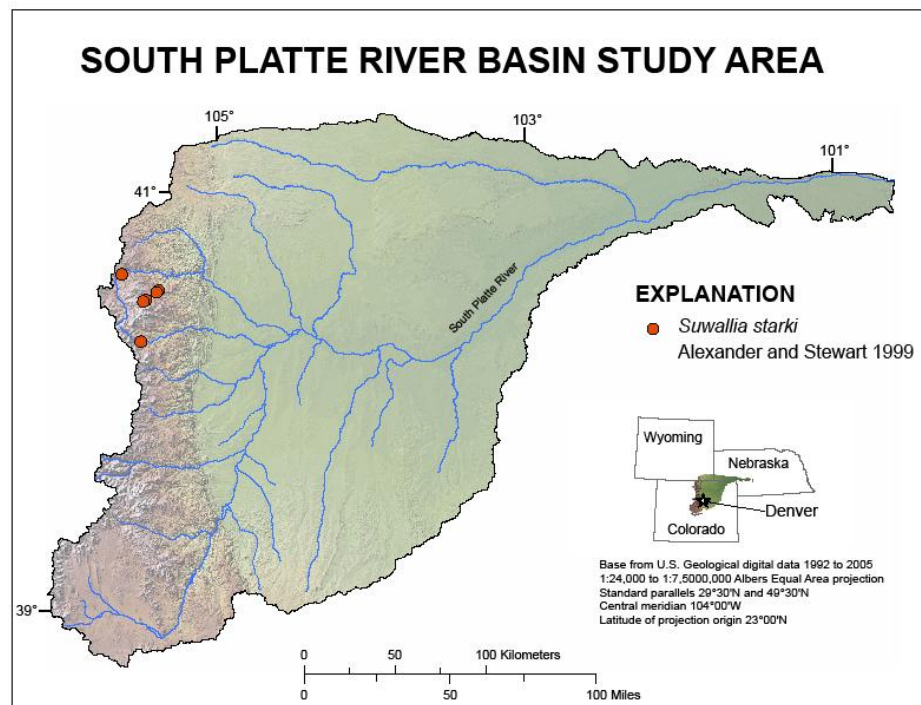
Distribution of *Paraperla frontalis* collections in the South Platte River Basin.



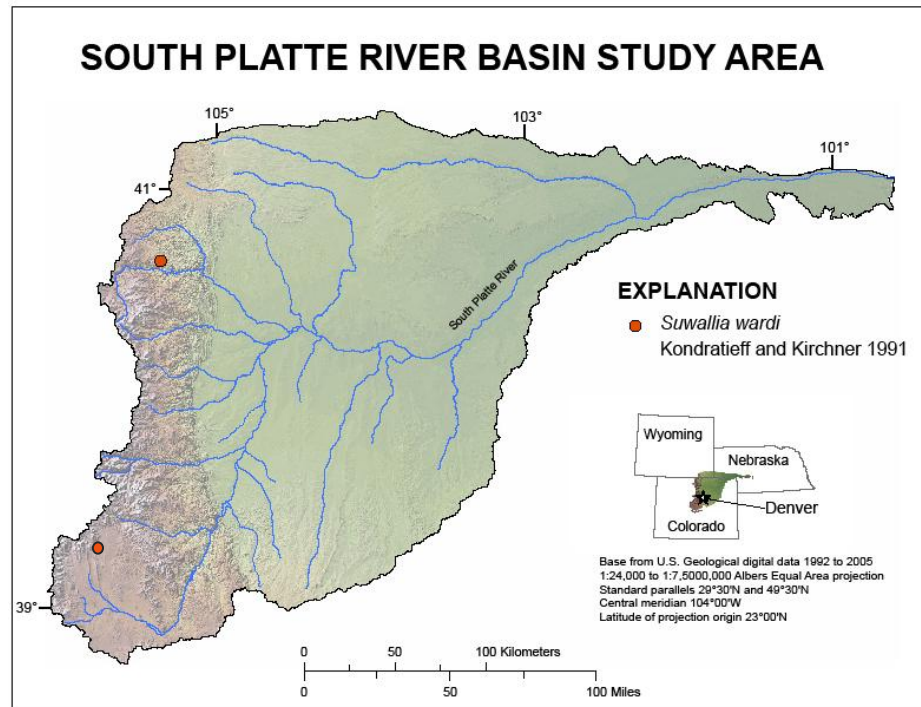
Distribution of *Plumiperla diversa* collections in the South Platte River Basin.



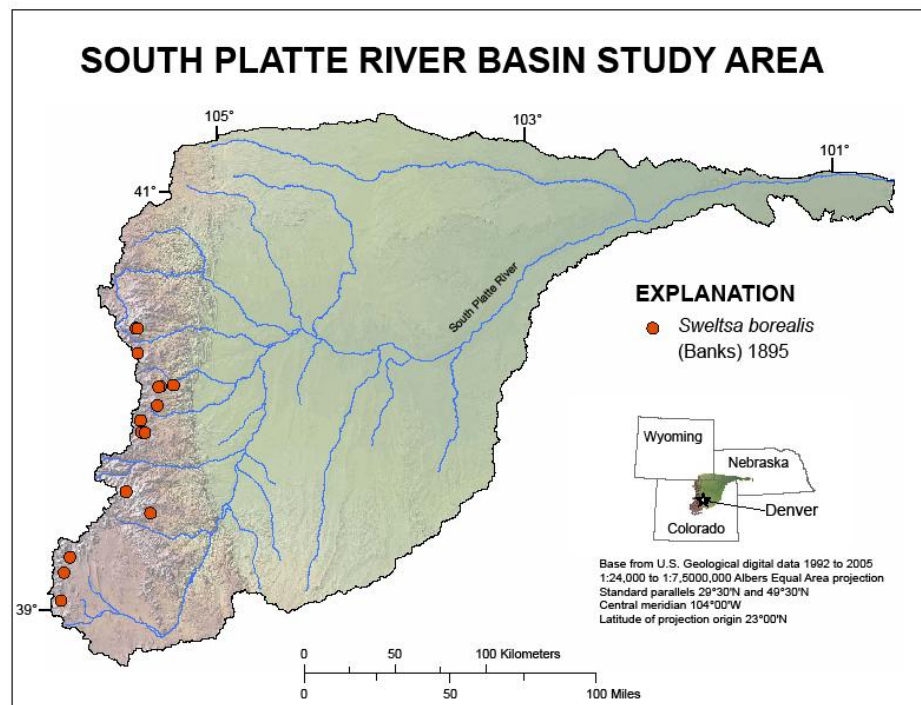
Distribution of *Suwallia pallidula* collections in the South Platte River Basin.



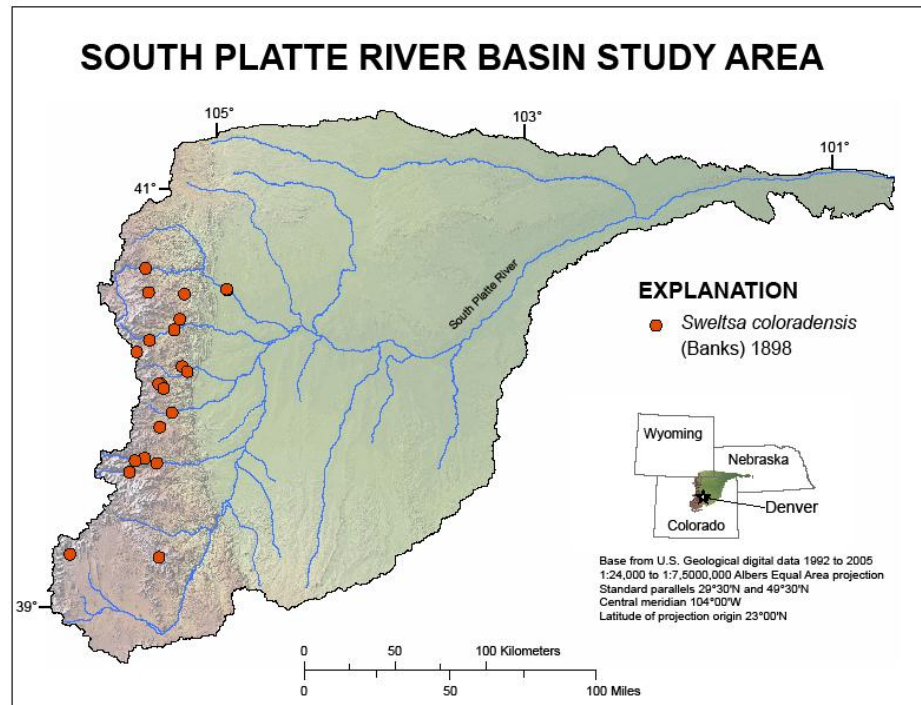
Distribution of *Suwallia starki* collections in the South Platte River Basin.



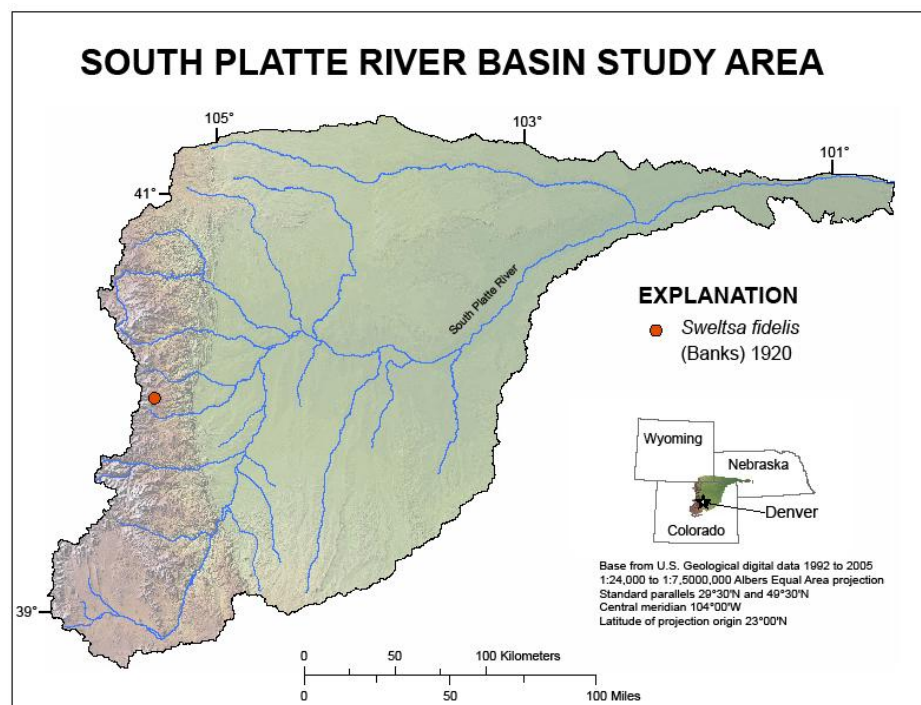
Distribution of *Suwallia wardi* collections in the South Platte River Basin.



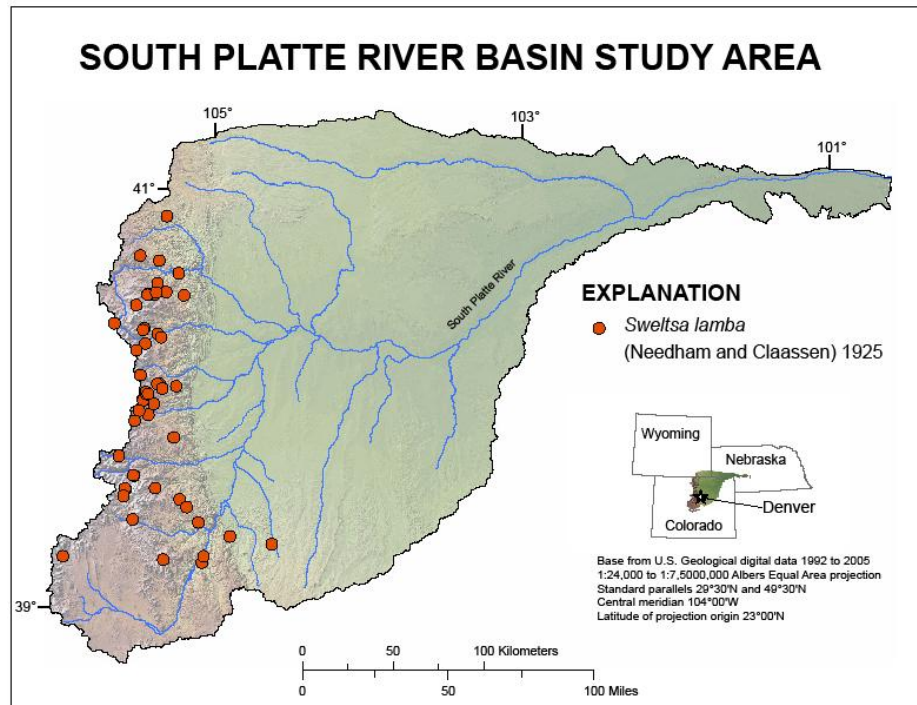
Distribution of *Sweltsa borealis* collections in the South Platte River Basin.



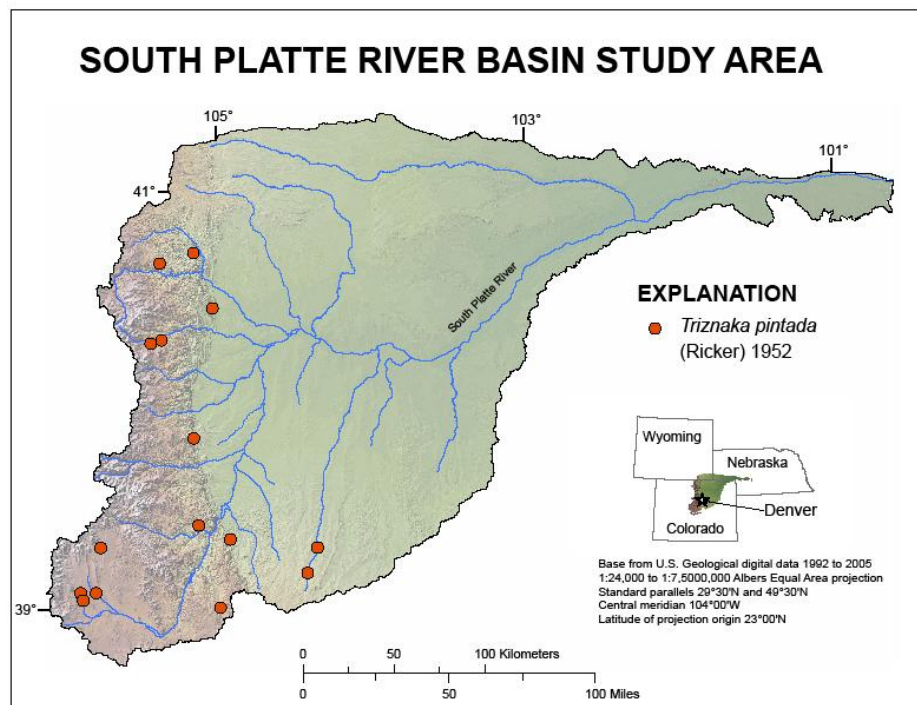
Distribution of *Sweltsa coloradensis* collections in the South Platte River Basin.



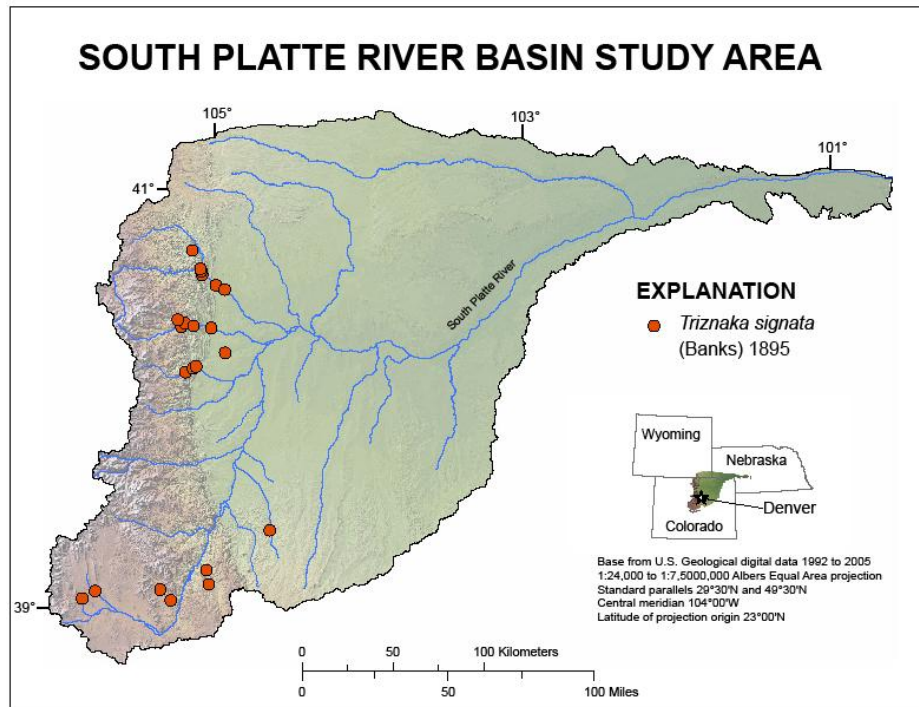
Distribution of *Sweltsa fidelis* collections in the South Platte River Basin.



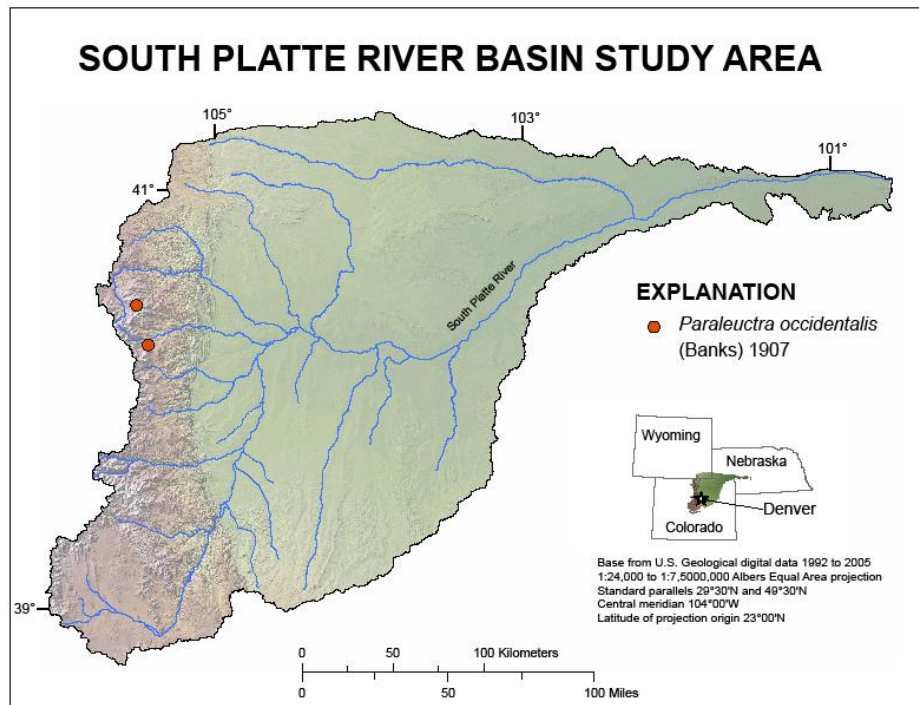
Distribution of *Sweltsa lamba* collections in the South Platte River Basin.



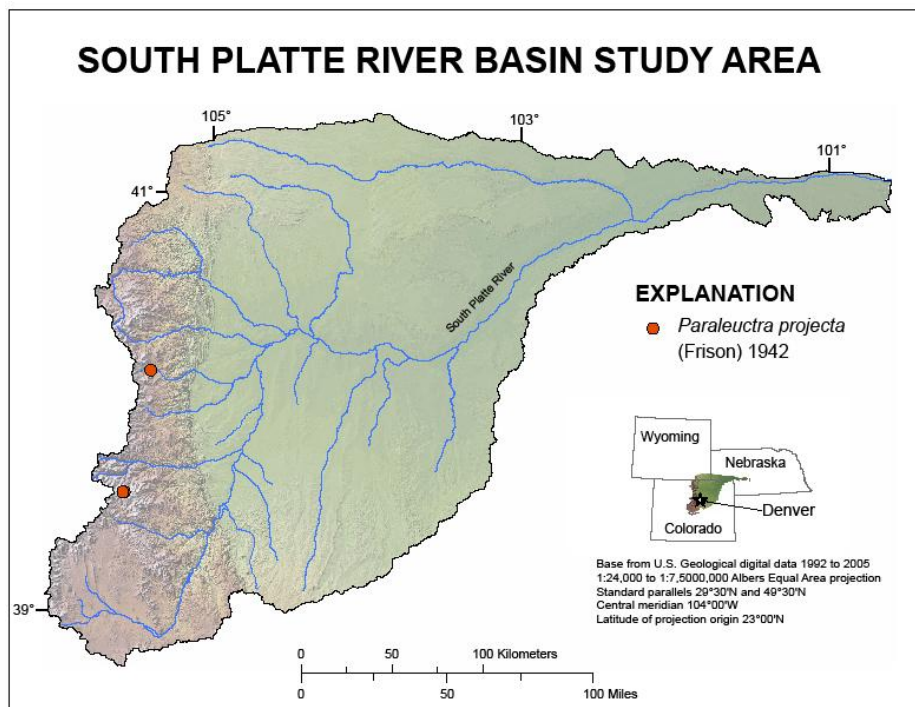
Distribution of *Triznaka pintada* collections in the South Platte River Basin.



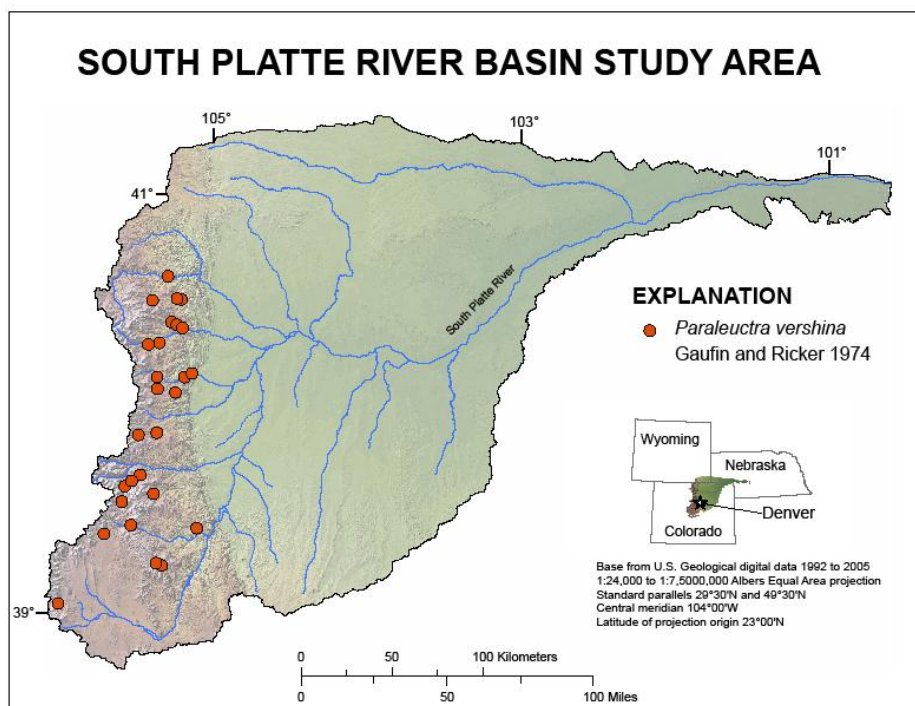
Distribution of *Triznaka signata* collections in the South Platte River Basin.



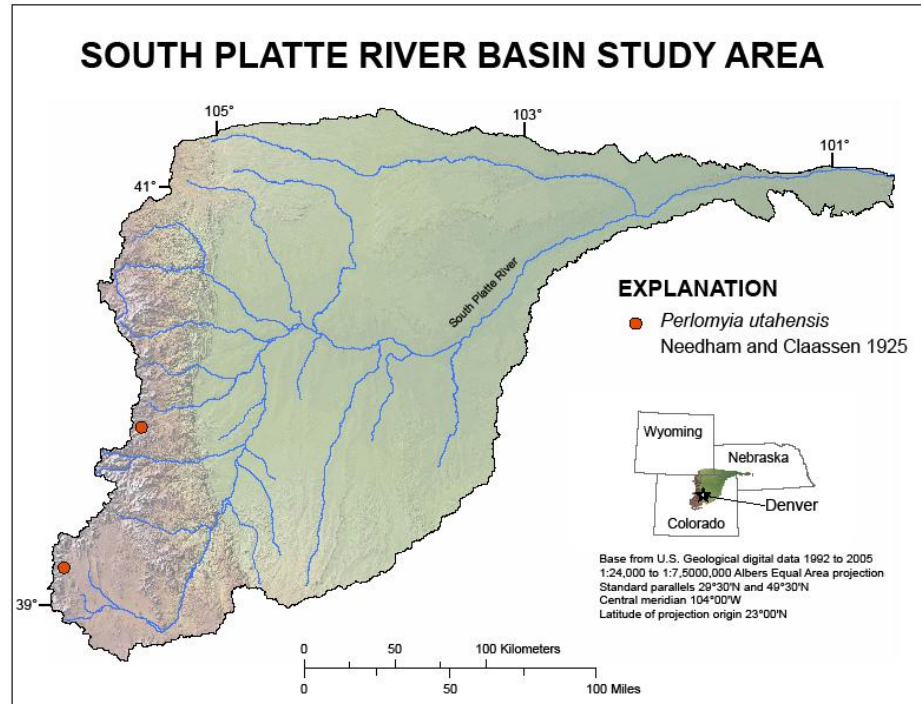
Distribution of *Paraleuctra occidentalis* collections in the South Platte River Basin.



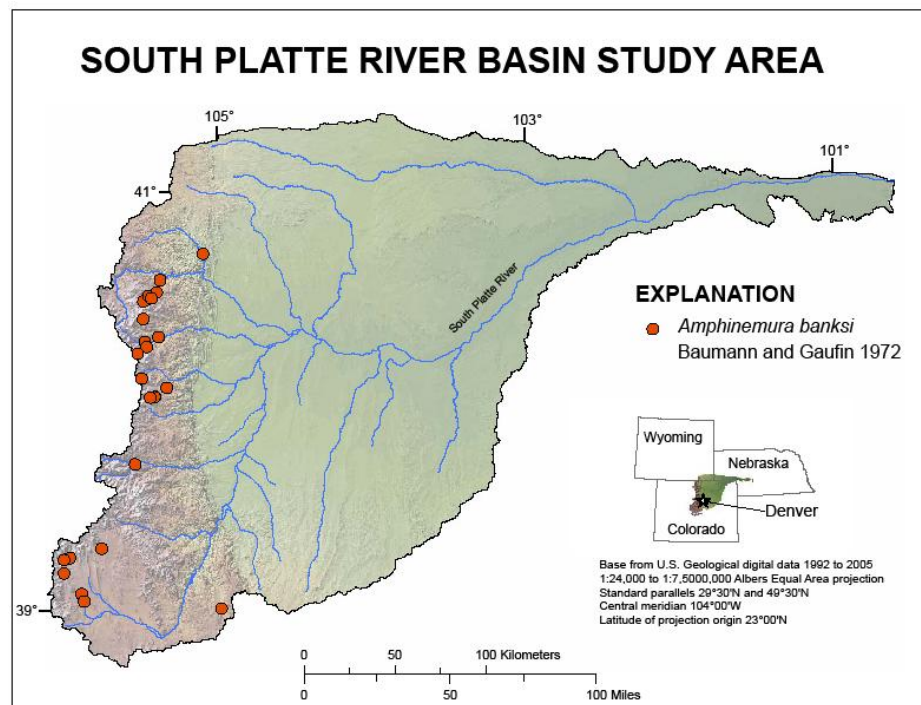
Distribution of *Paraleuctra projecta* collections in the South Platte River Basin.



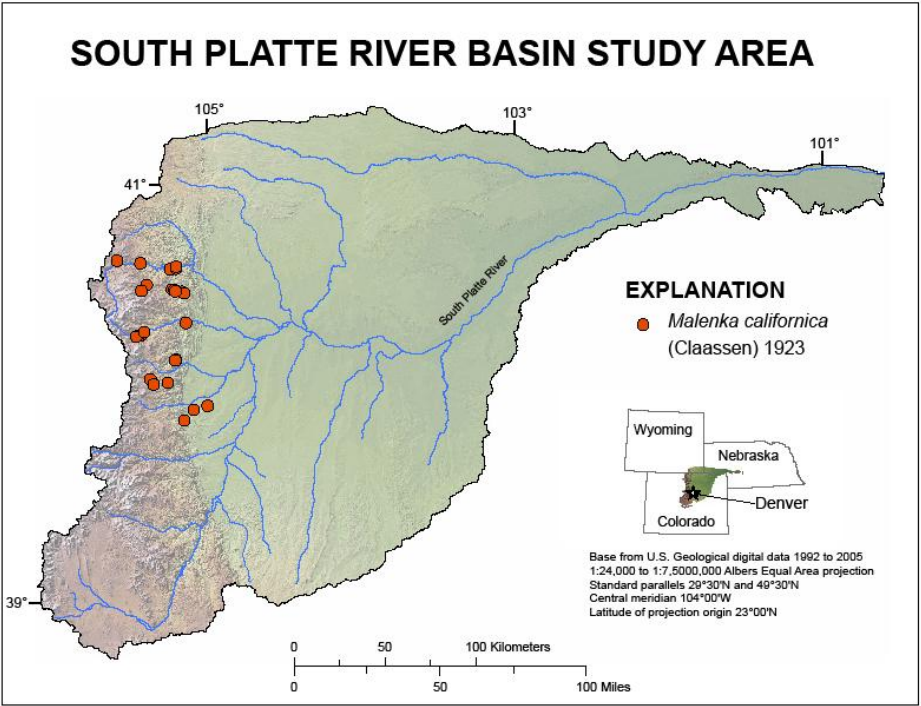
Distribution of *Paraleuctra vershina* collections in the South Platte River Basin.



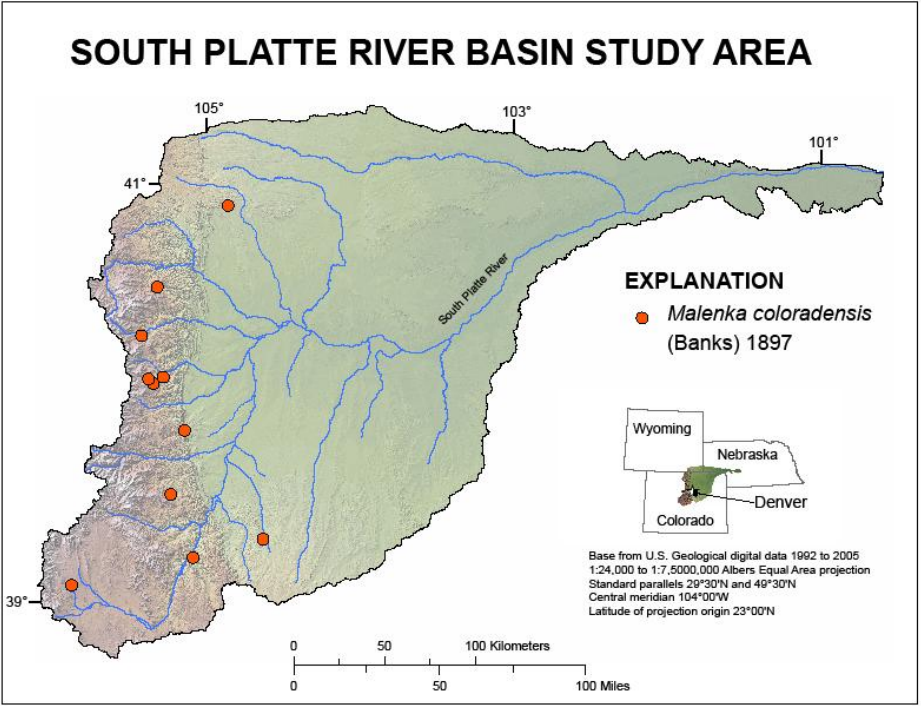
Distribution of *Perlomyia utahensis* collections in the South Platte River Basin.



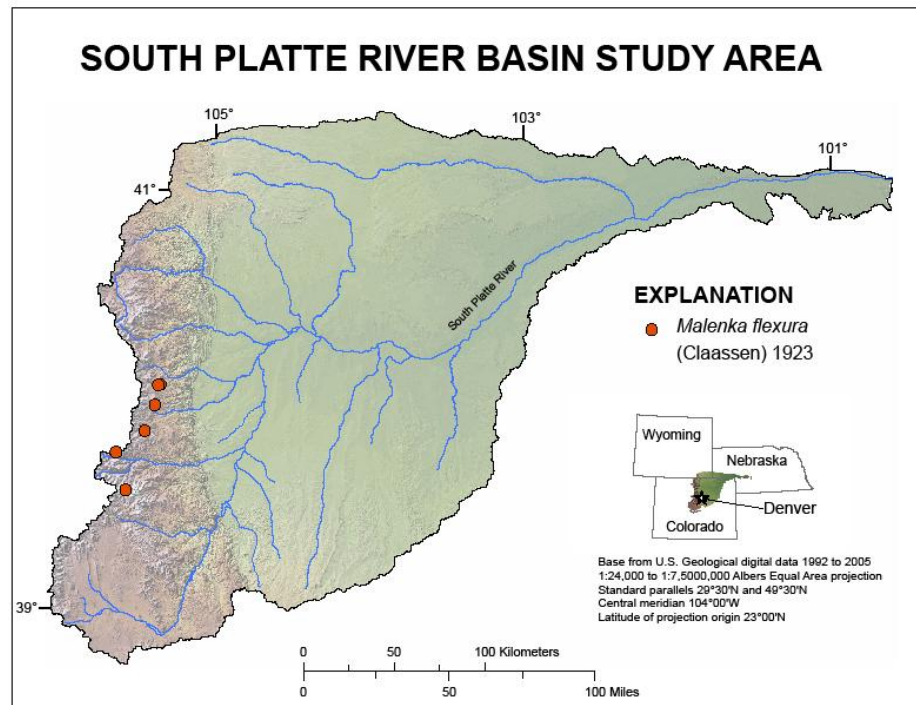
Distribution of *Amphinemura banksi* collections in the South Platte River Basin.



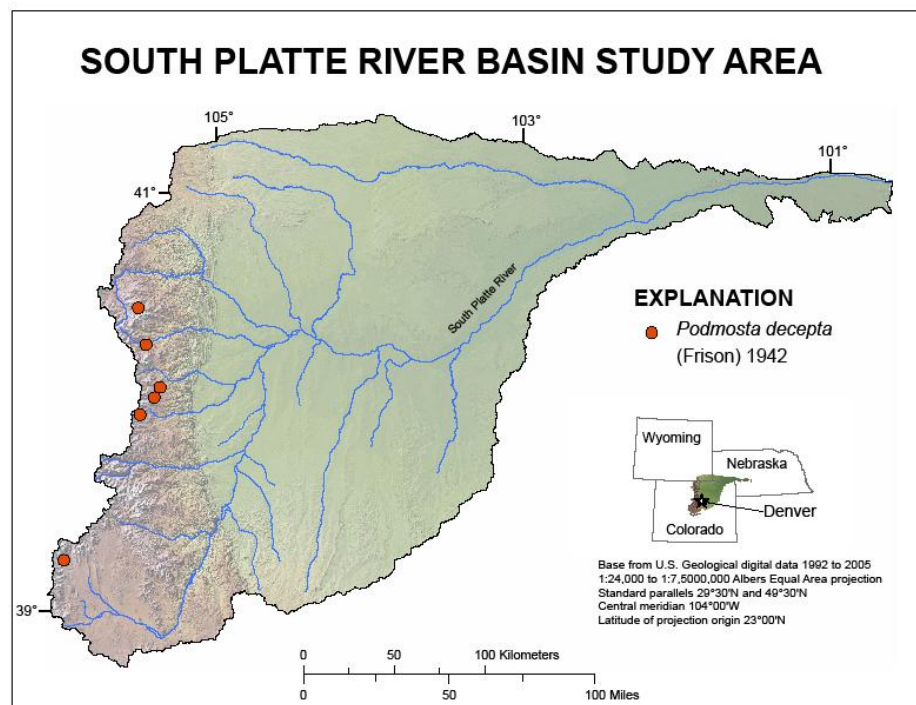
Distribution of *Malenka californica* collections in the South Platte River Basin.



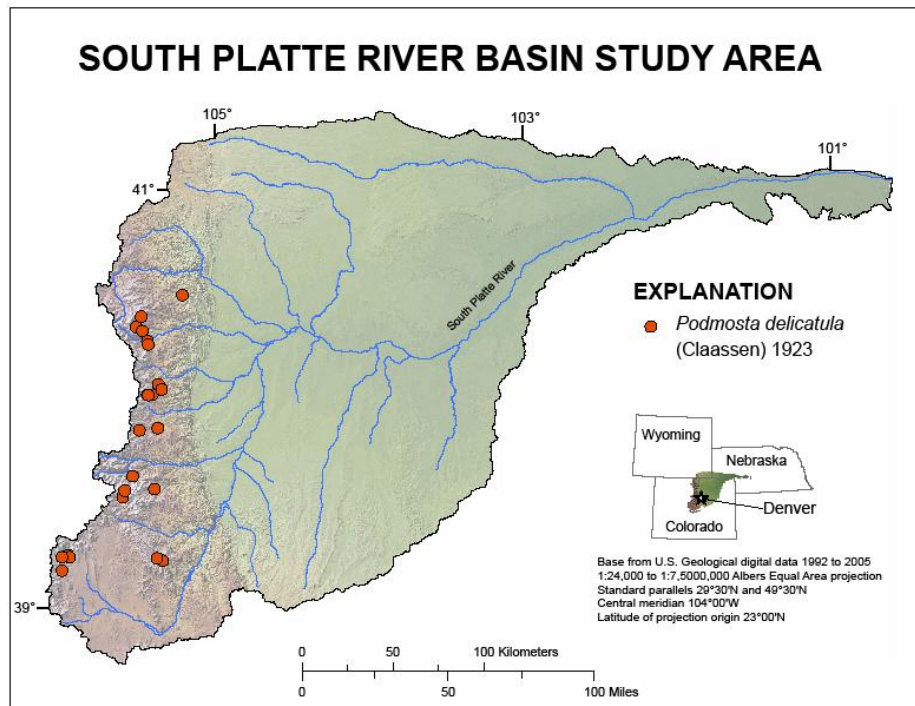
Distribution of *Malenka coloradensis* collections in the South Platte River Basin.



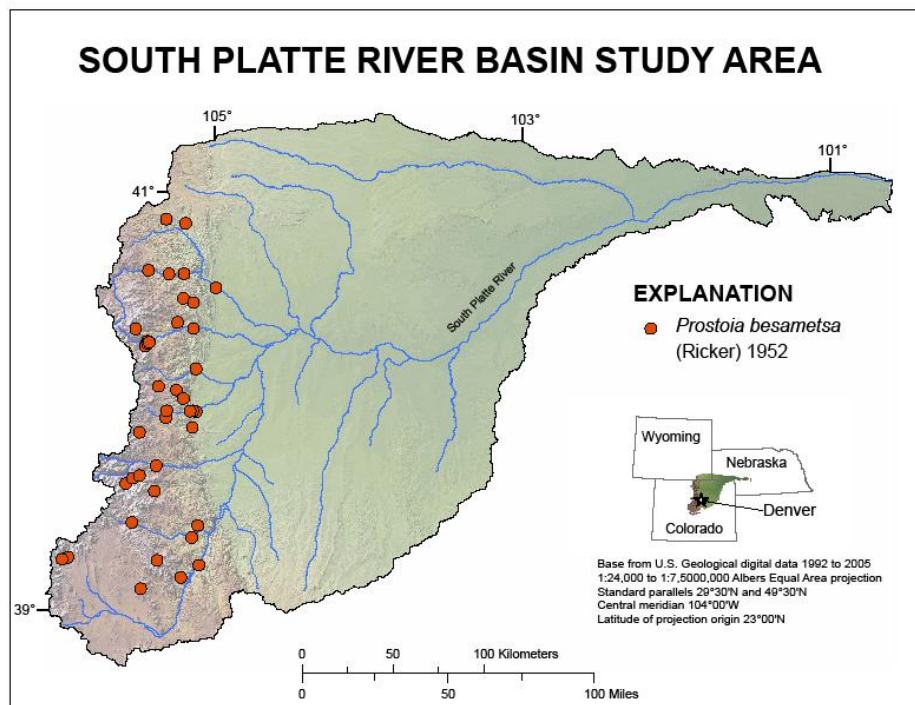
Distribution of *Malenka flexura* collections in the South Platte River Basin.



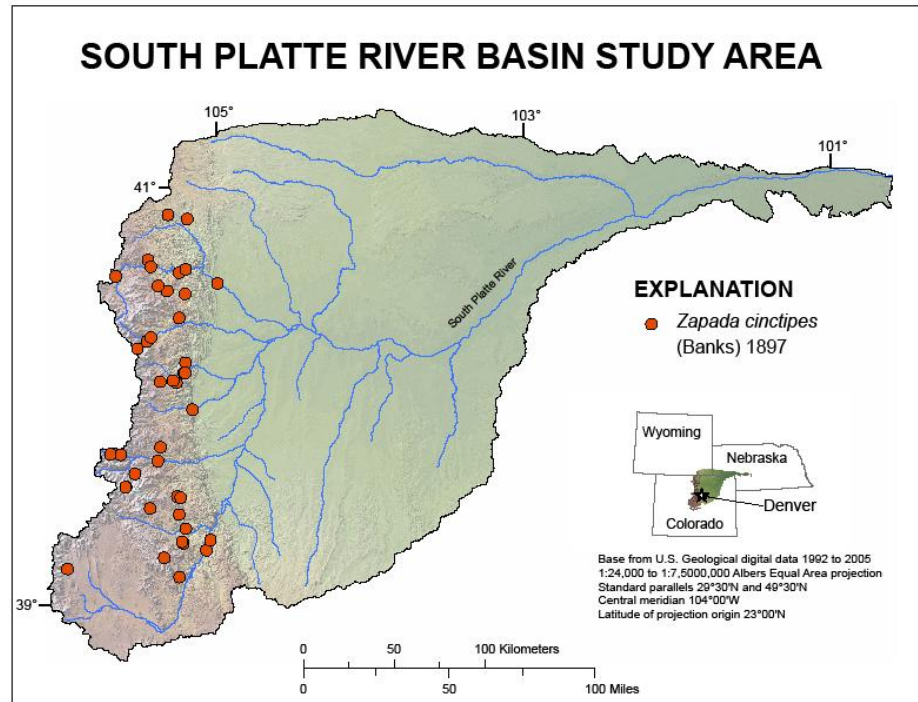
Distribution of *Podmosta decepta* collections in the South Platte River Basin.



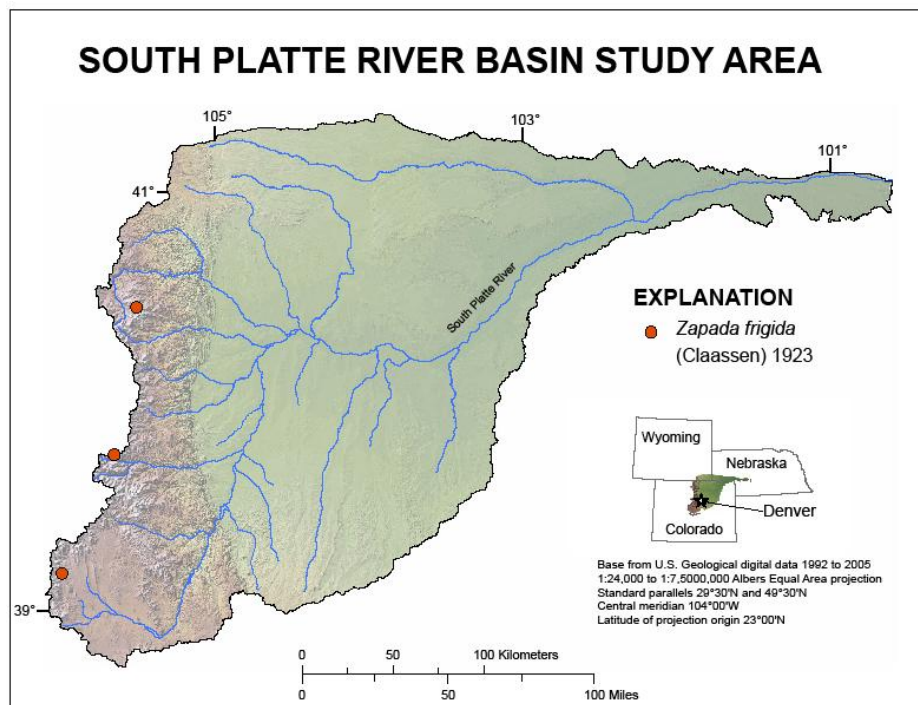
Distribution of *Podmosta delicatula* collections in the South Platte River Basin.



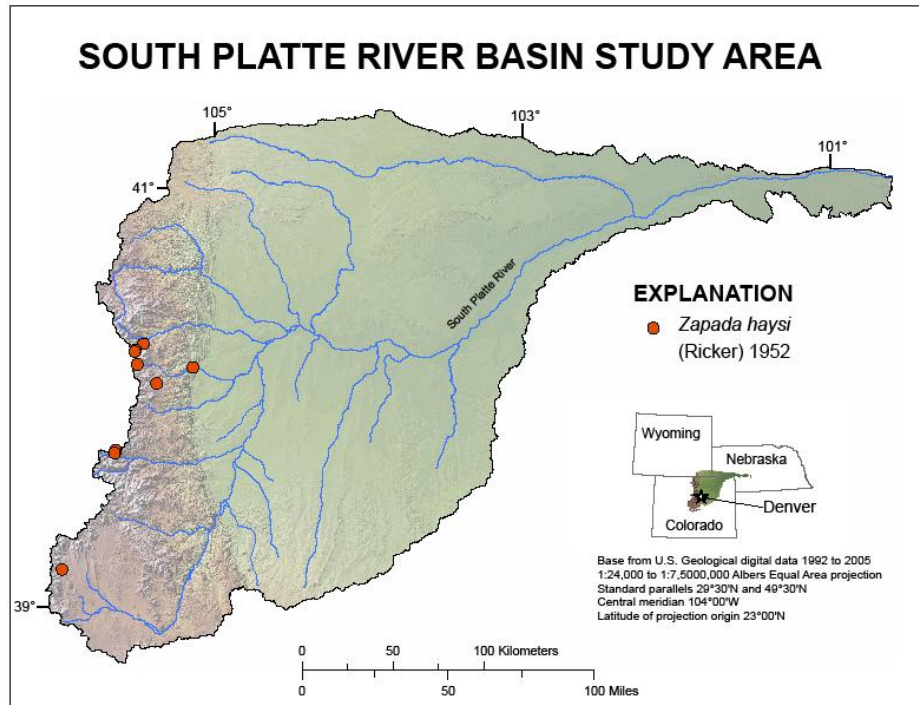
Distribution of *Prostoia besametsa* collections in the South Platte River Basin.



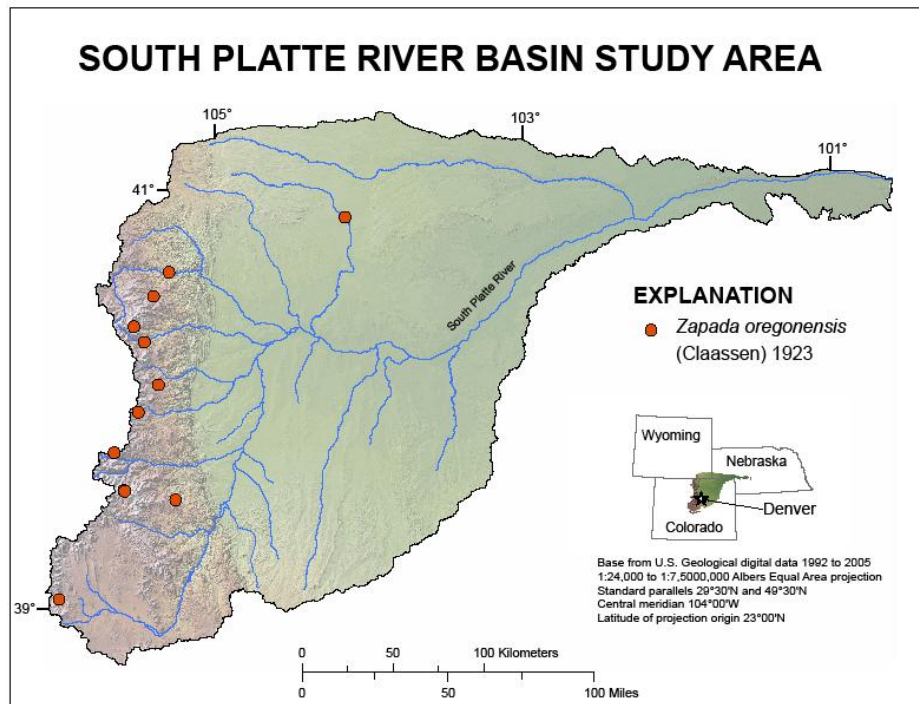
Distribution of *Zapada cinctipes* collections in the South Platte River Basin.



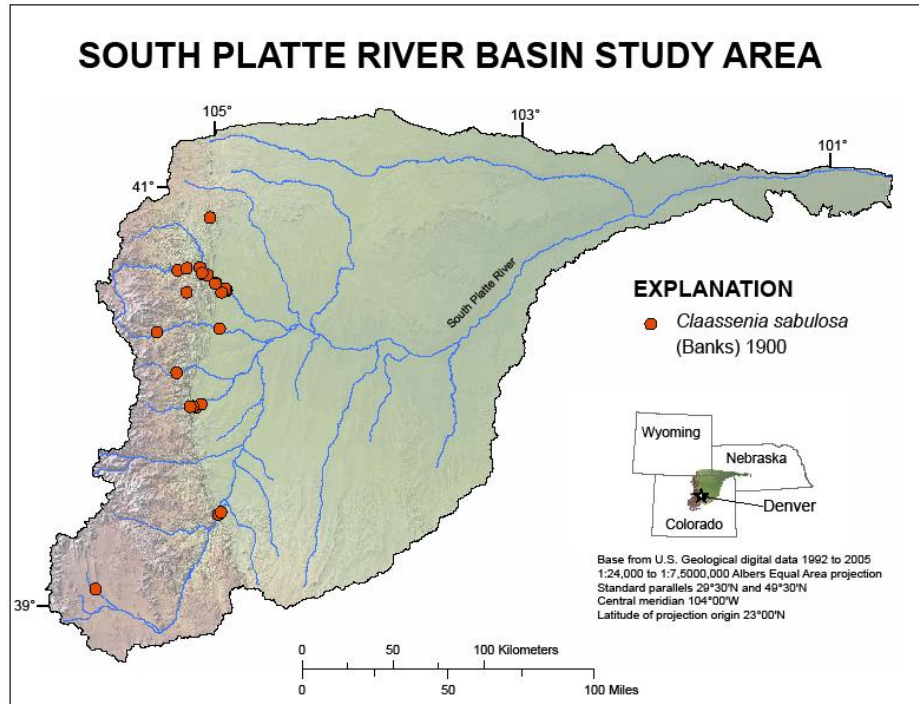
Distribution of *Zapada frigida* collections in the South Platte River Basin.



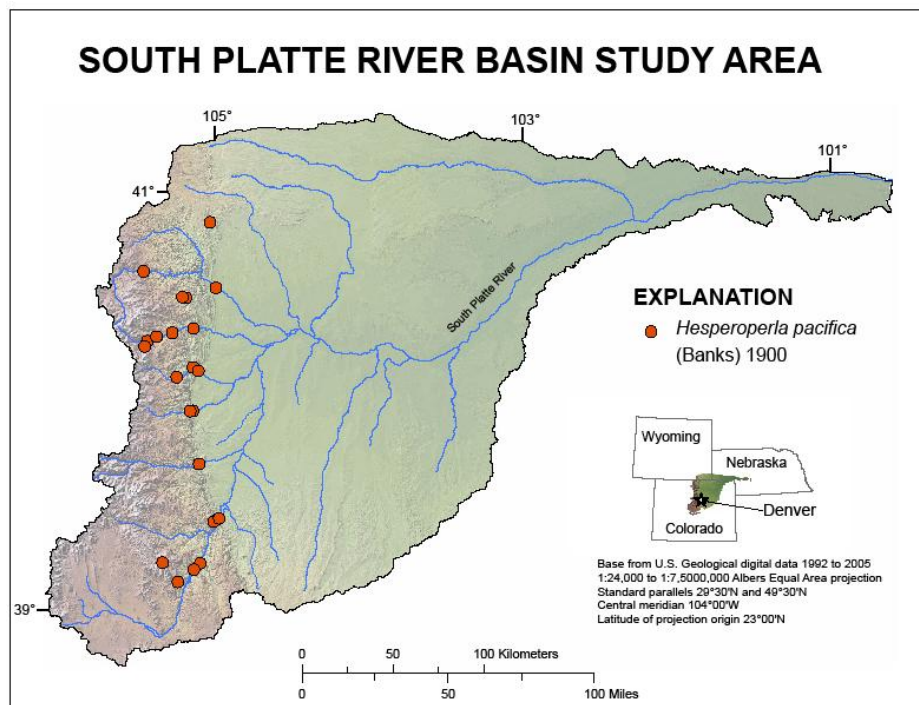
Distribution of *Zapada haysi* collections in the South Platte River Basin.



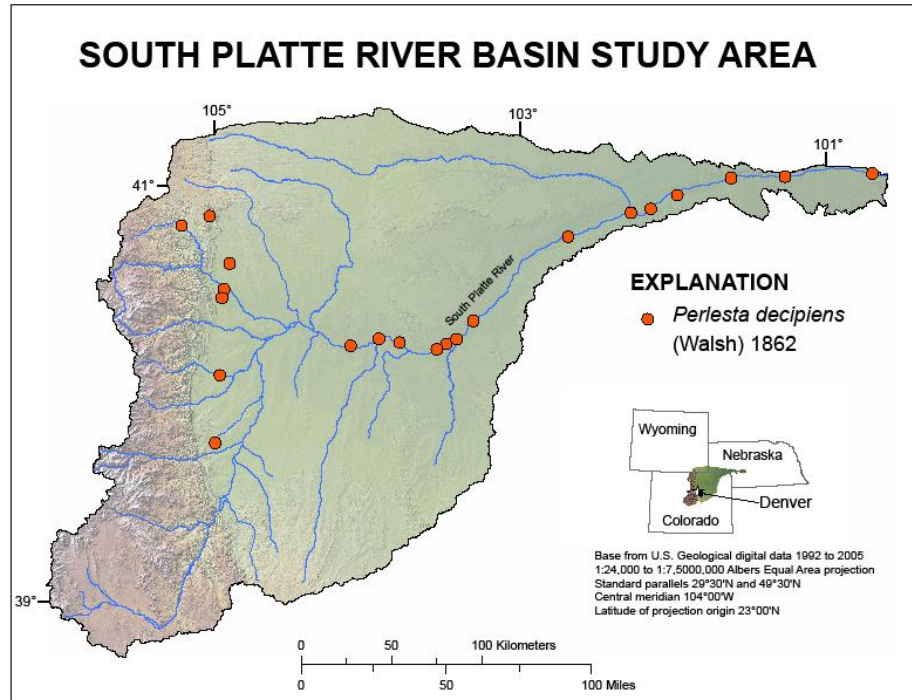
Distribution of *Zapada oregonensis* collections in the South Platte River Basin.



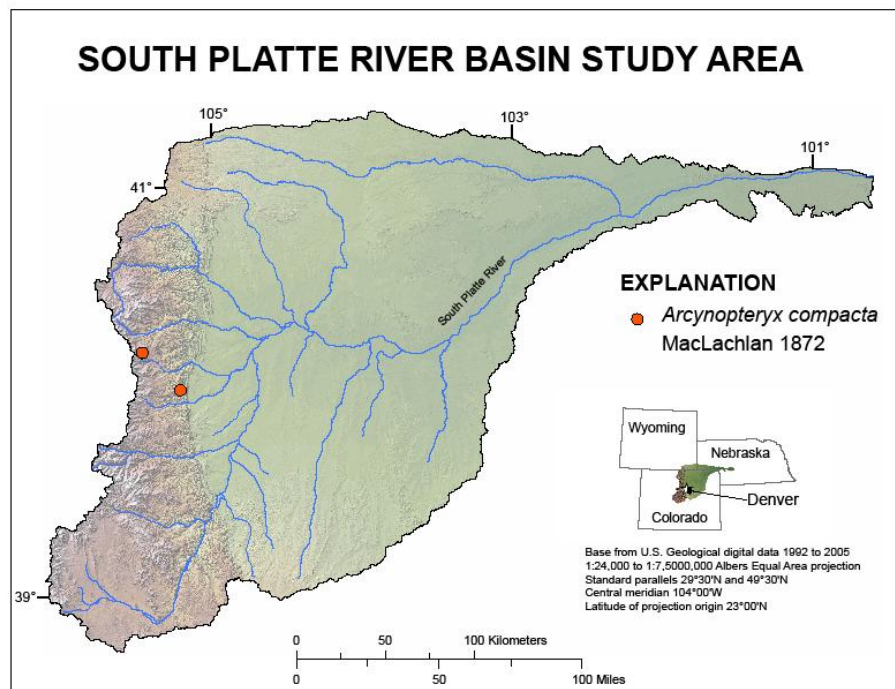
Distribution of *Claassenia sabulosa* collections in the South Platte River Basin.



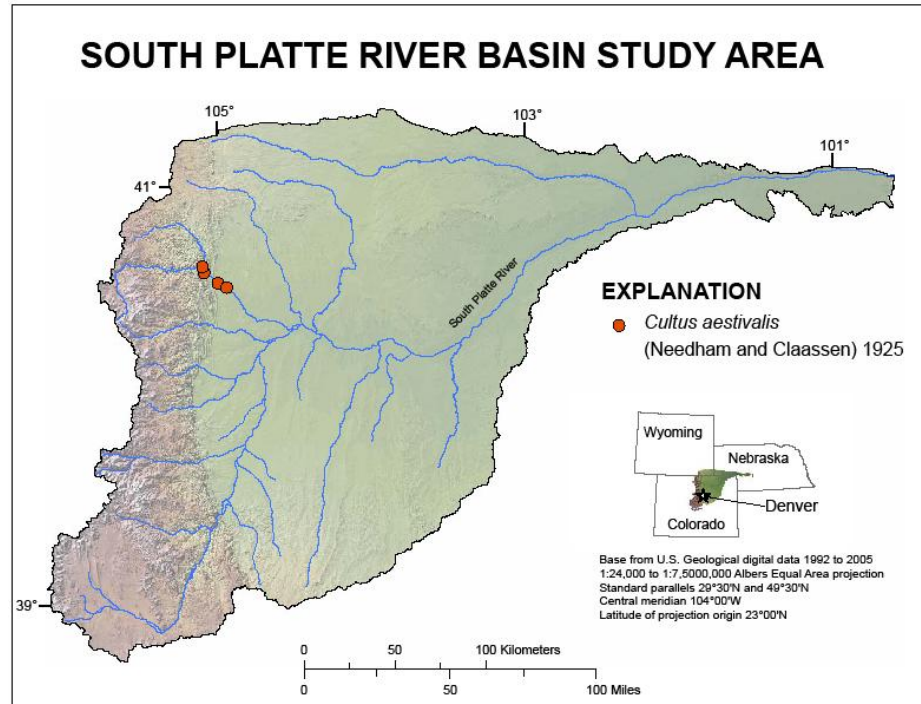
Distribution of *Hesperoperla pacifica* collections in the South Platte River Basin.



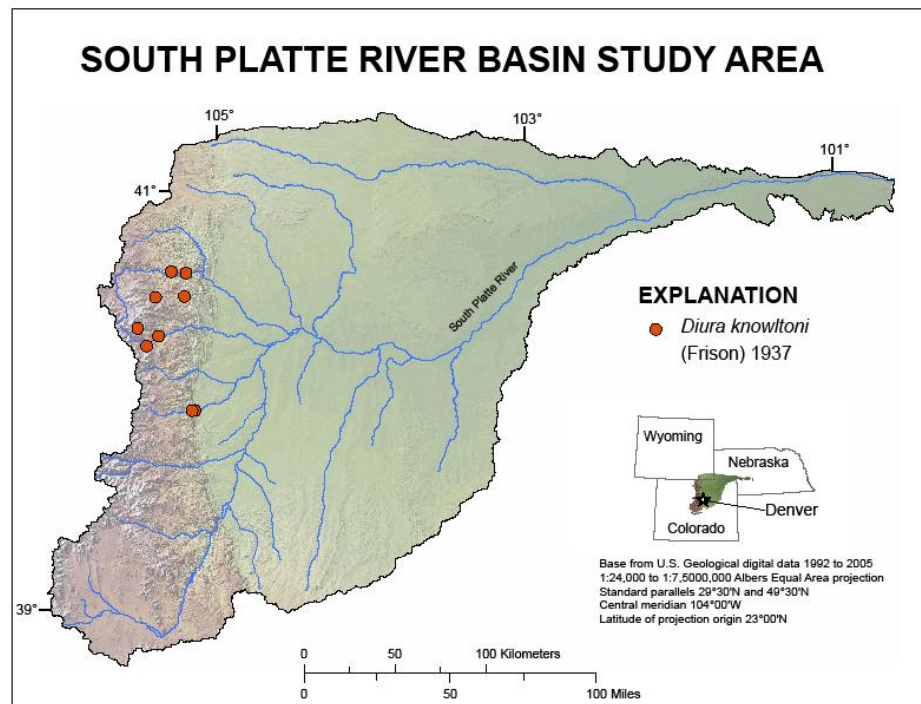
Distribution of *Perlesta decipiens* collections in the South Platte River Basin.



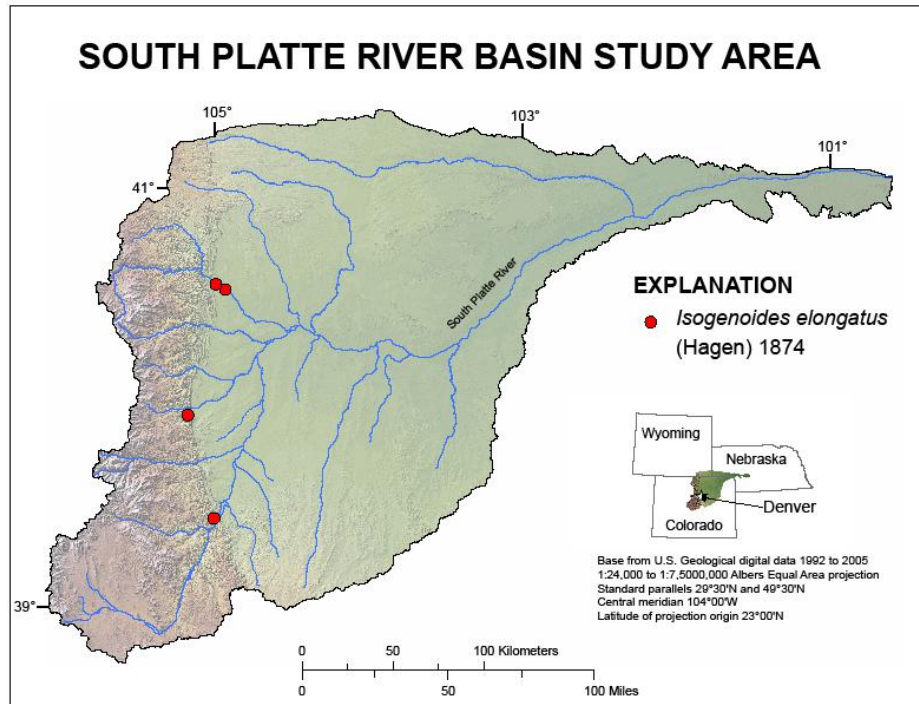
Distribution of *Arcynopteryx compacta* collections in the South Platte River Basin.



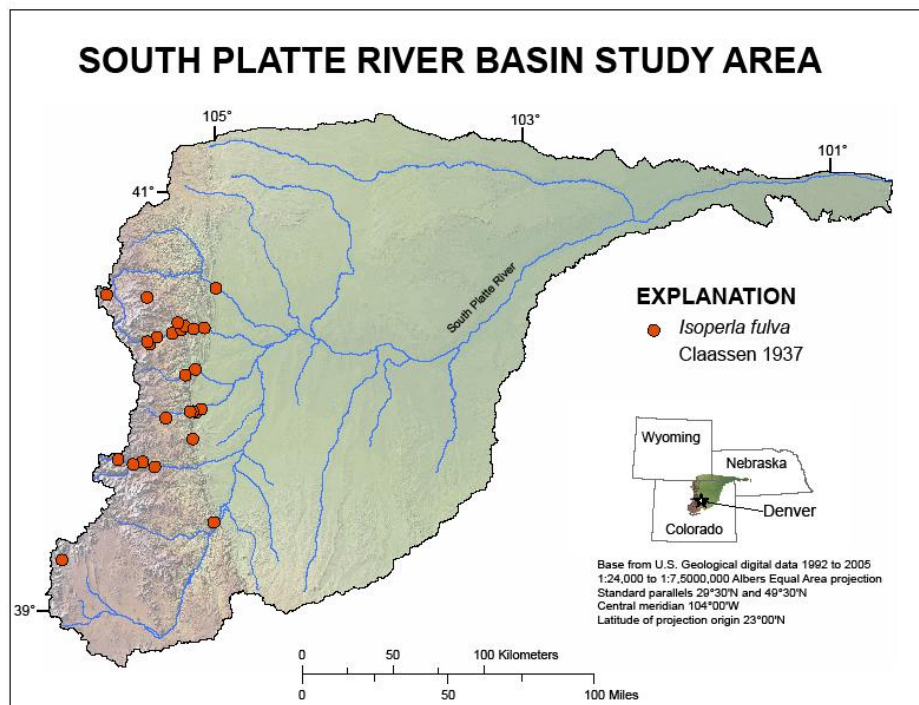
Distribution of *Cultus aestivalis* collections in the South Platte River Basin



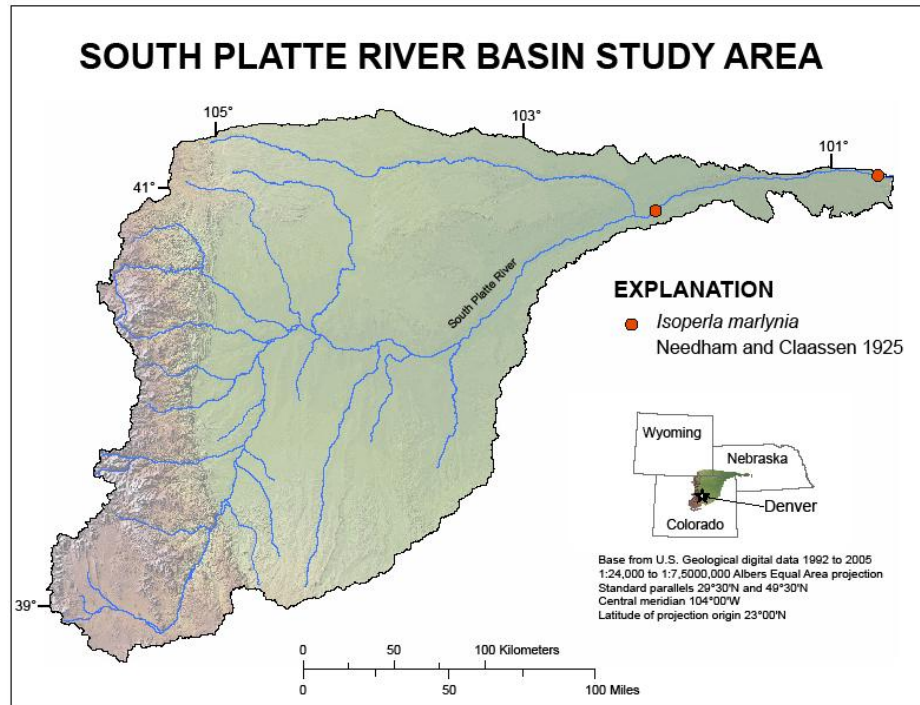
Distribution of *Diura knowltoni* collections in the South Platte River Basin.



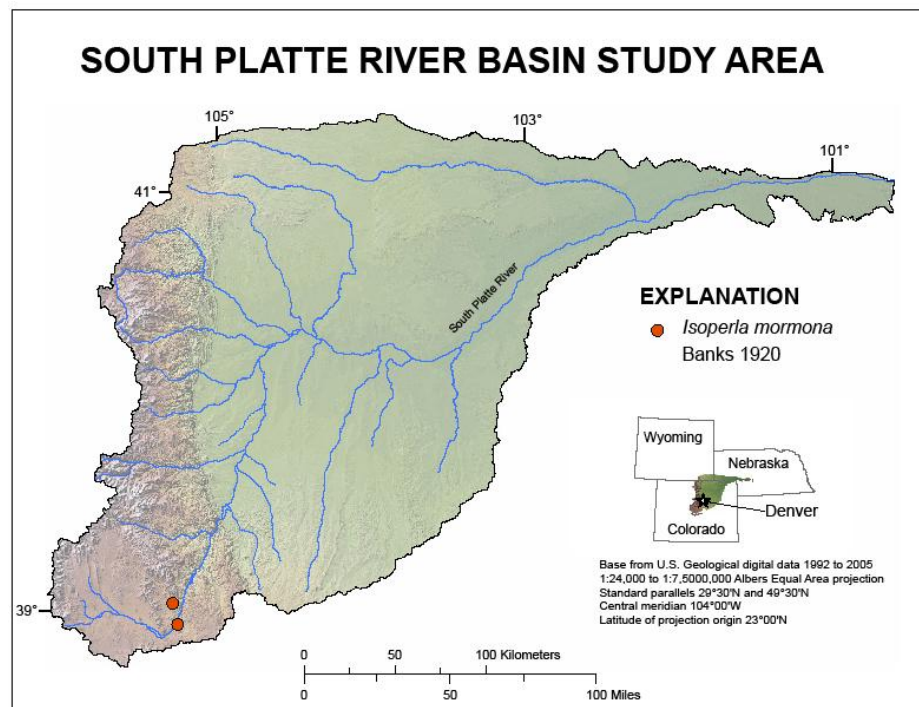
Distribution of *Isogenoides elongatus* collections in the South Platte River Basin.



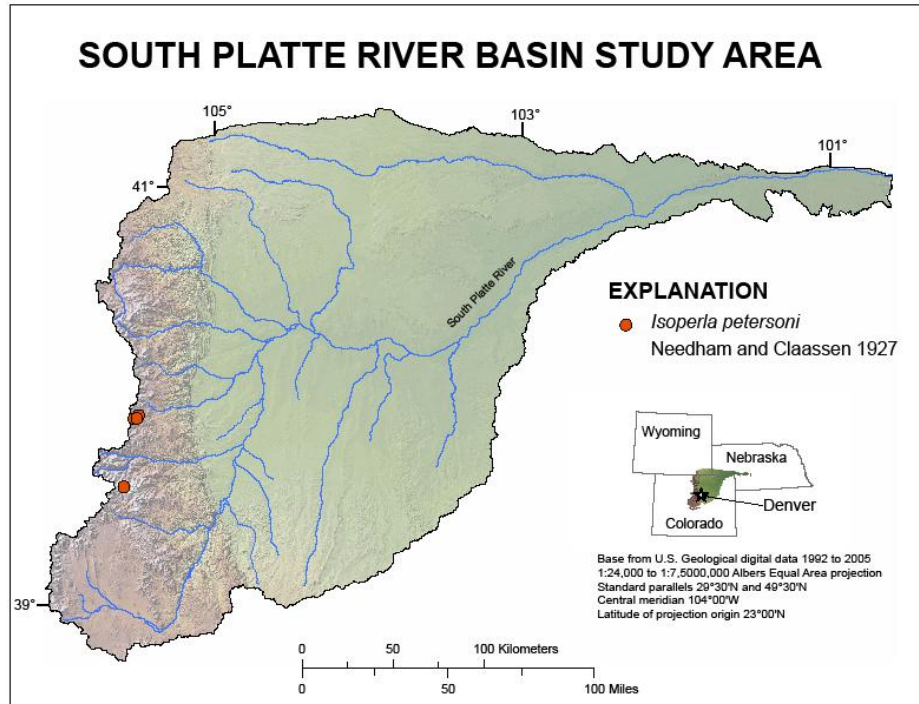
Distribution of *Isoperla fulva* collections in the South Platte River Basin.



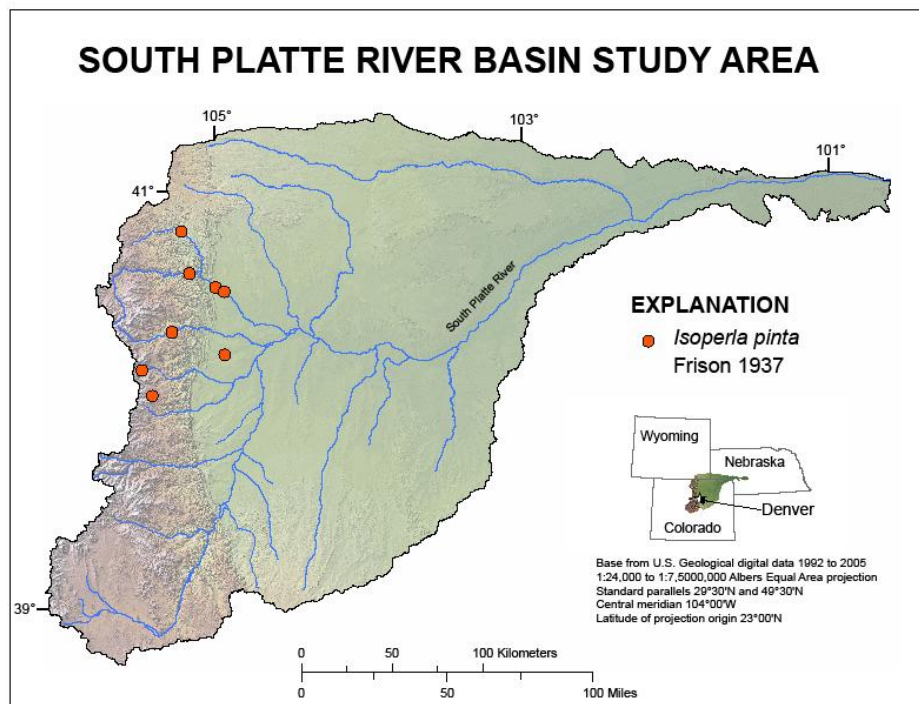
Distribution of *Isoperla marlynia* collections in the South Platte River Basin.



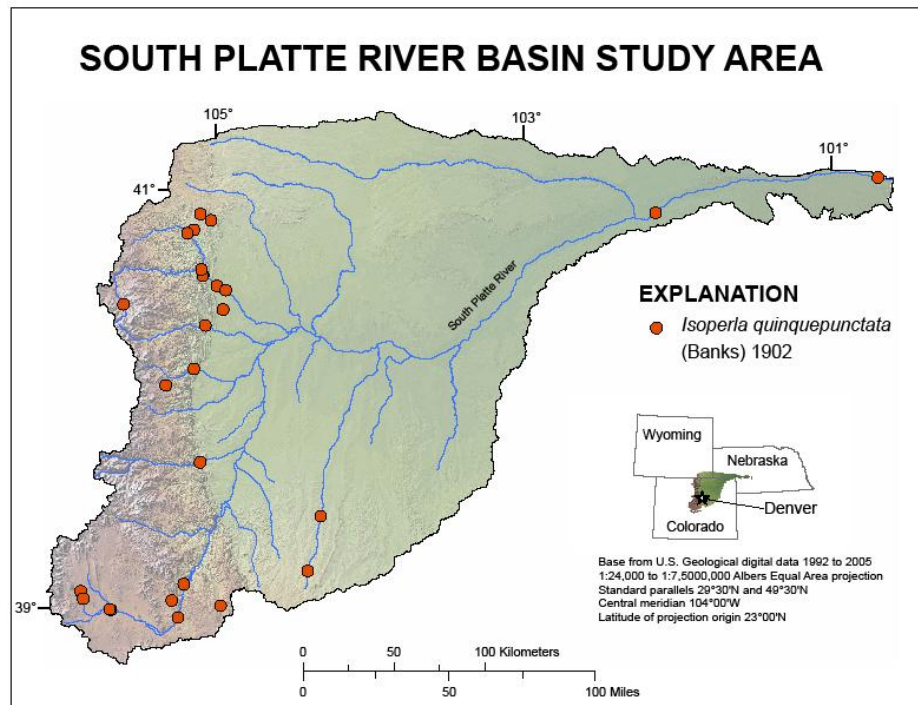
Distribution of *Isoperla mormona* collections in the South Platte River Basin.



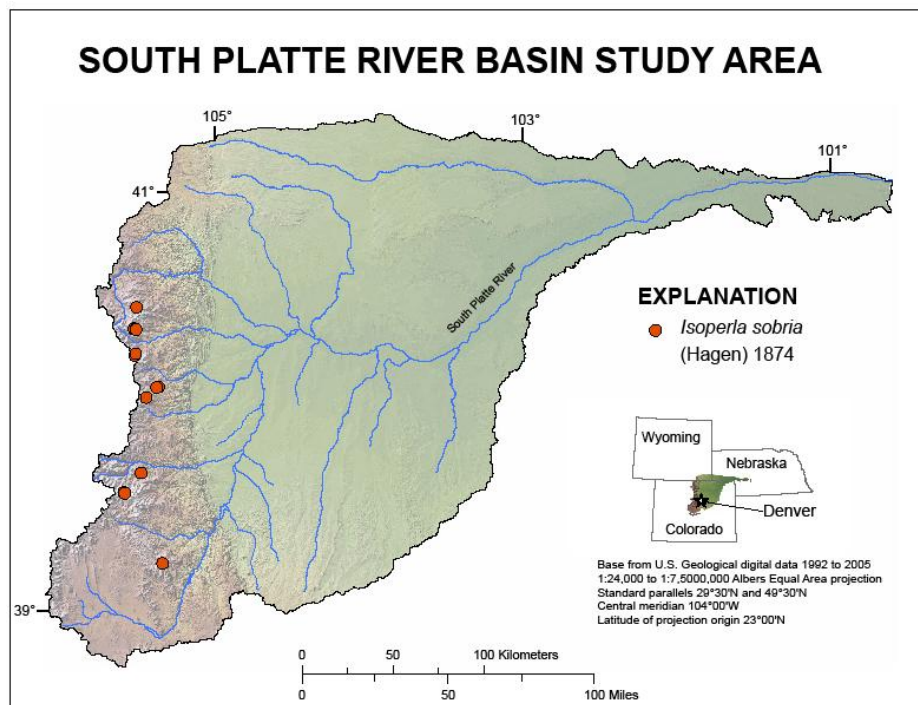
Distribution of *Isoperla petersoni* collections in the South Platte River Basin.



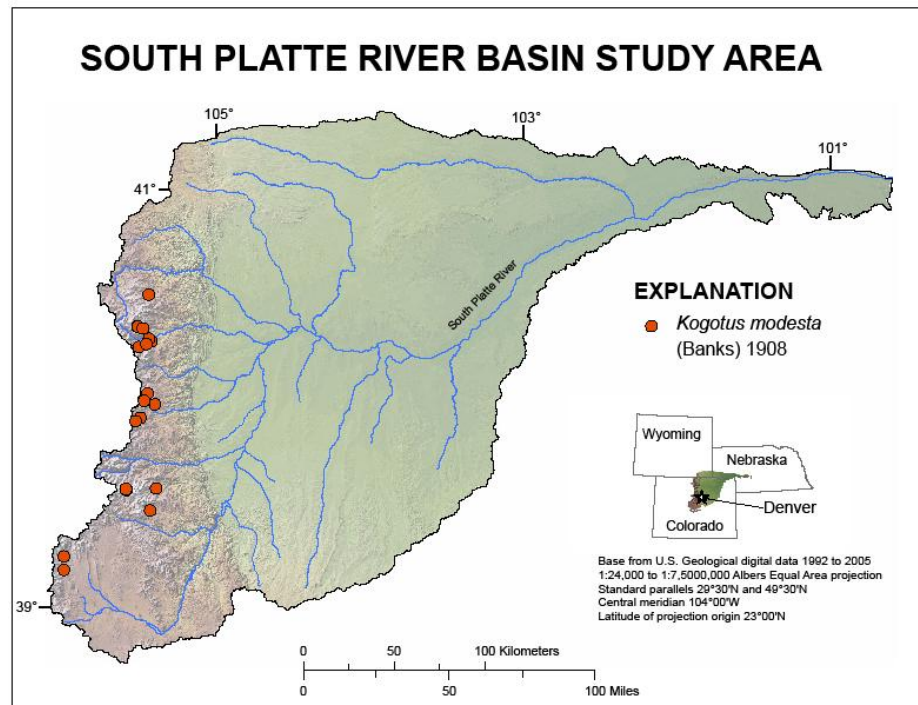
Distribution of *Isoperla pinta* collections in the South Platte River Basin.



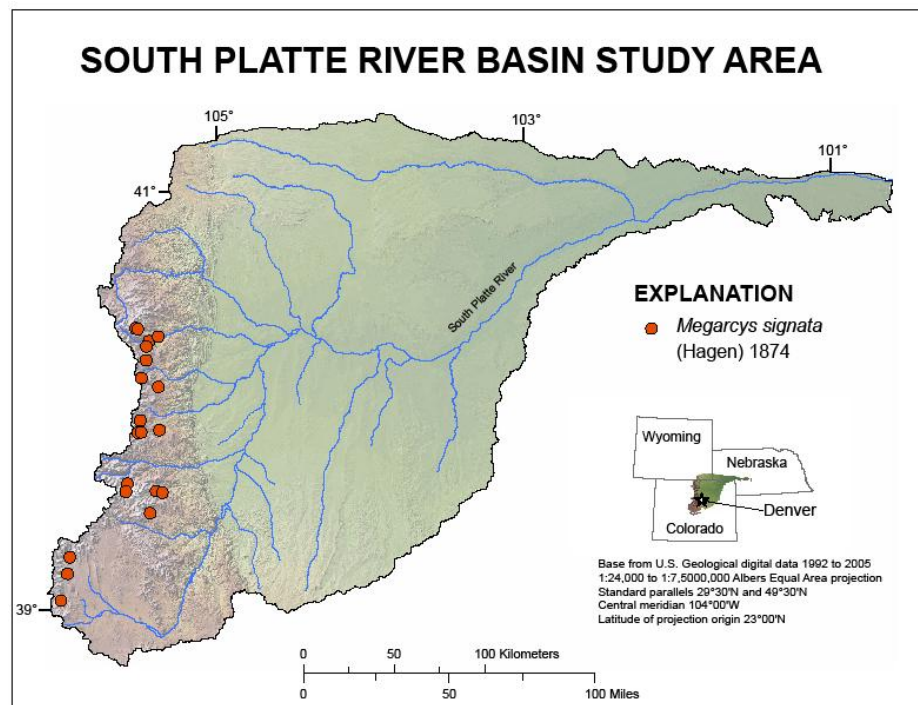
Distribution of *Isoperla quinquepunctata* collections in the South Platte River Basin.



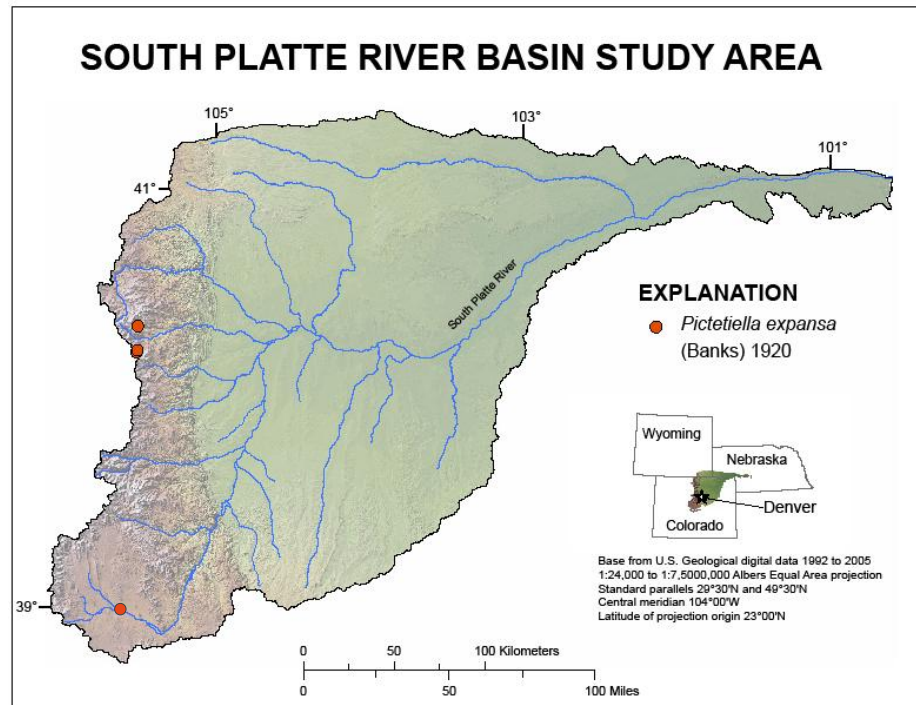
Distribution of *Isoperla sobria* collections in the South Platte River Basin.



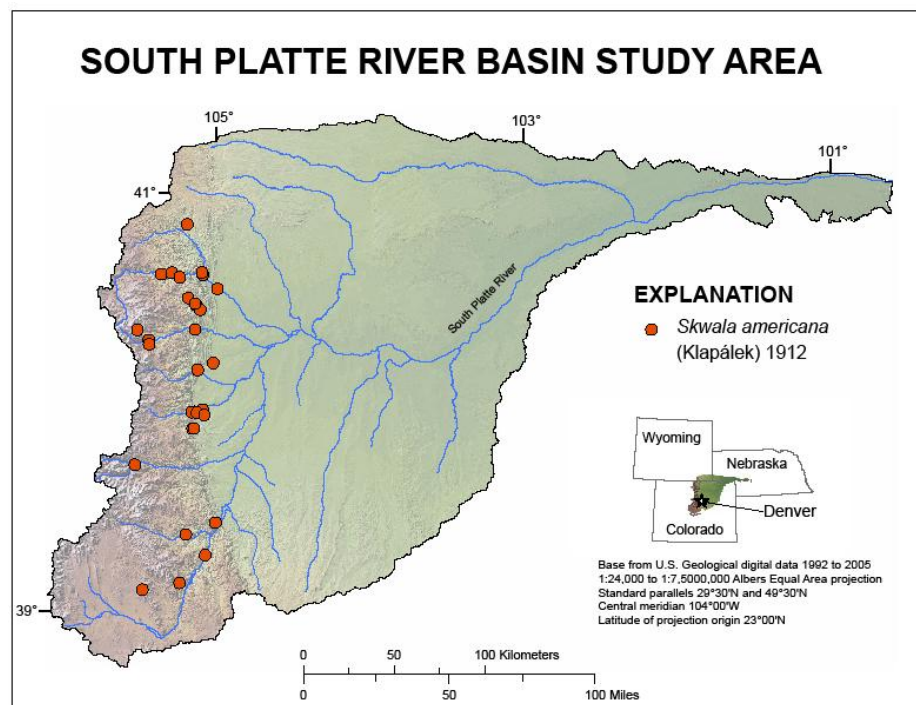
Distribution of *Kogotus modesta* collections in the South Platte River Basin.



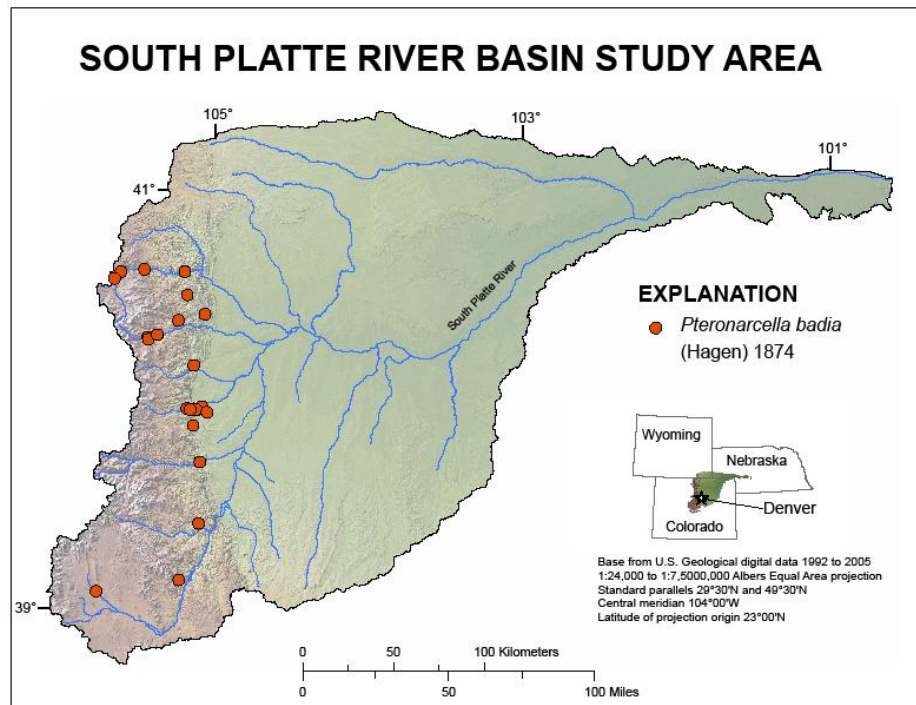
Distribution of *Megarcys signata* collections in the South Platte River Basin.



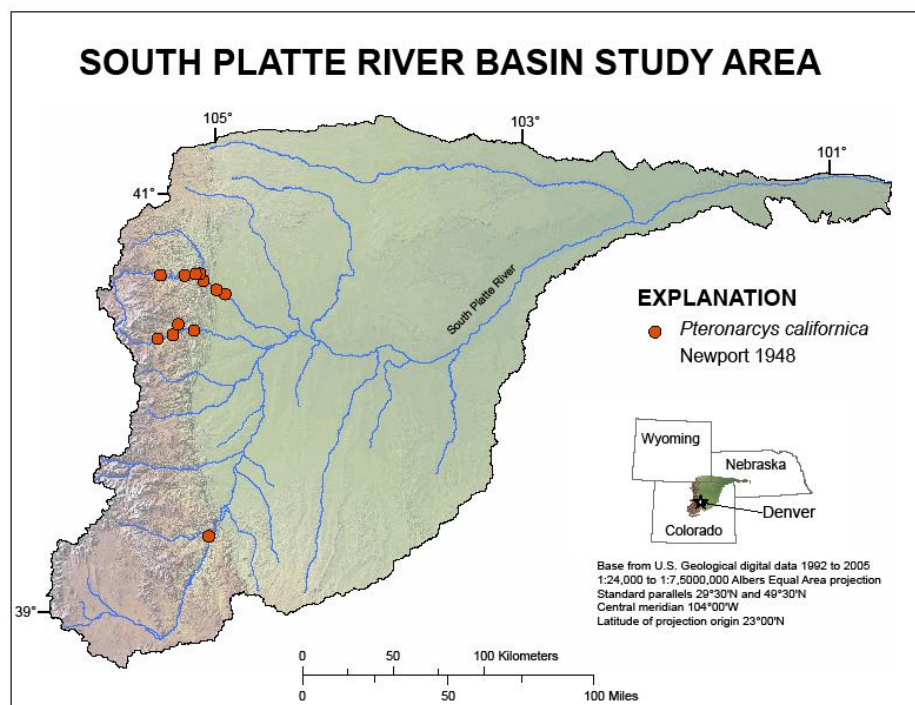
Distribution of *Pictetiella expansa* collections in the South Platte River Basin.



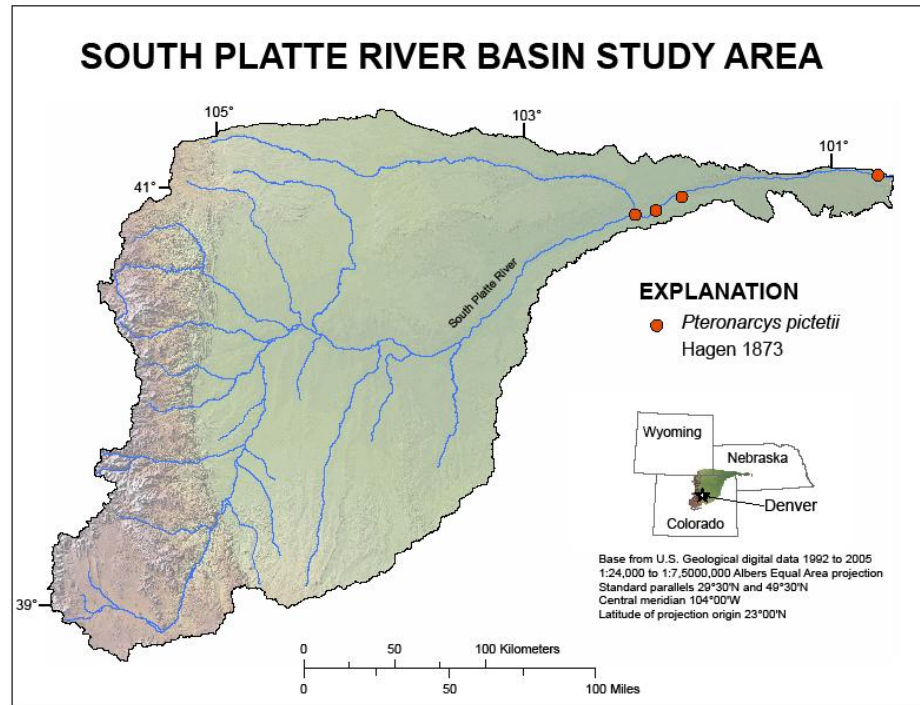
Distribution of *Skwala americana* collections in the South Platte River Basin.



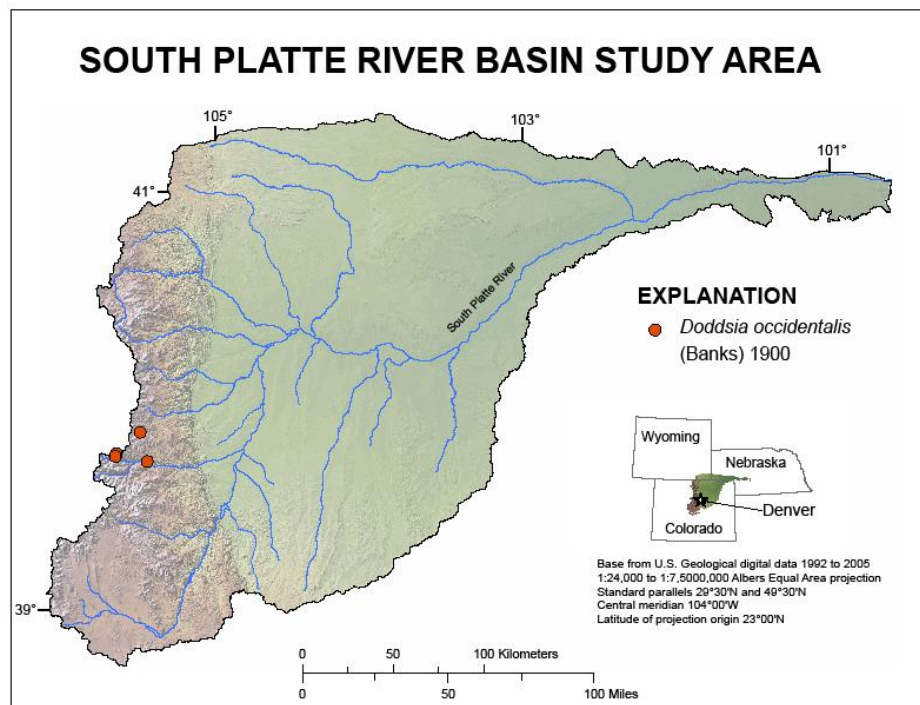
Distribution of *Pteronarcella badia* collections in the South Platte River Basin.



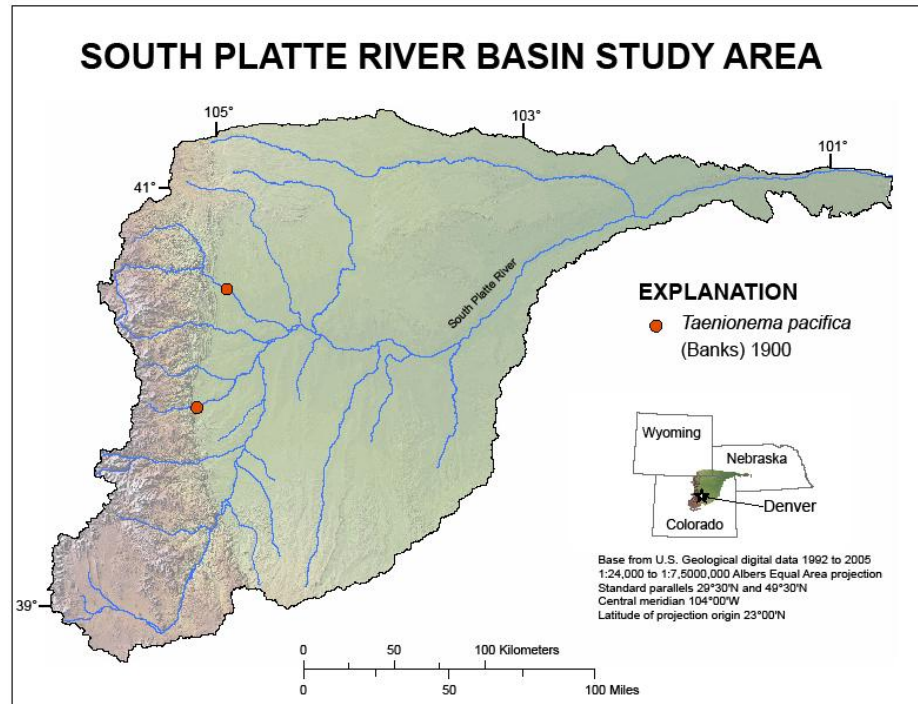
Distribution of *Pteronarcys californica* collections in the South Platte River Basin.



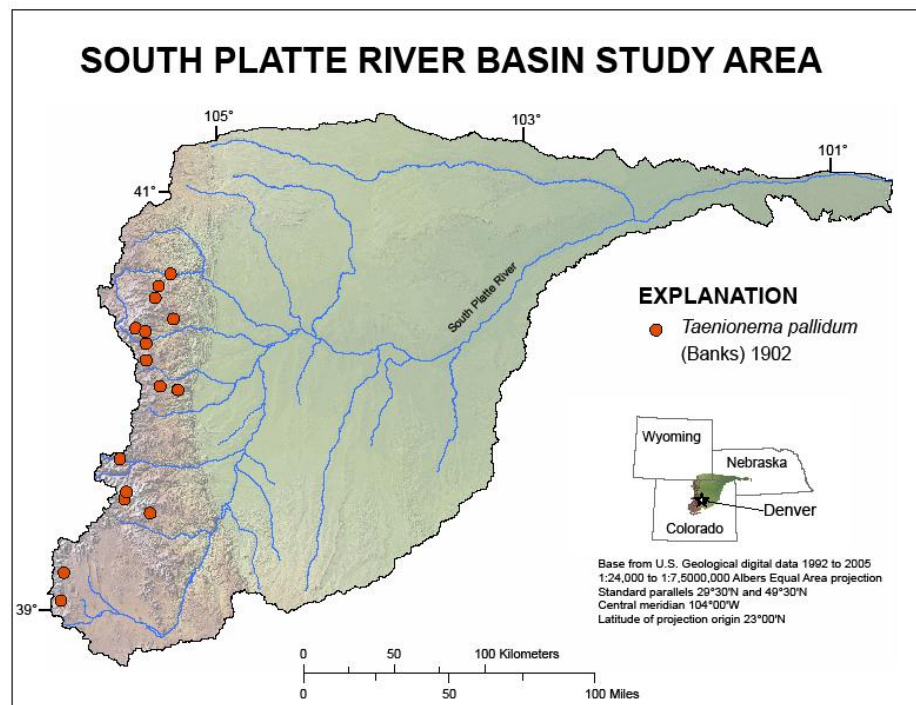
Distribution of *Pteronarcys pictetii* collections in the South Platte River Basin.



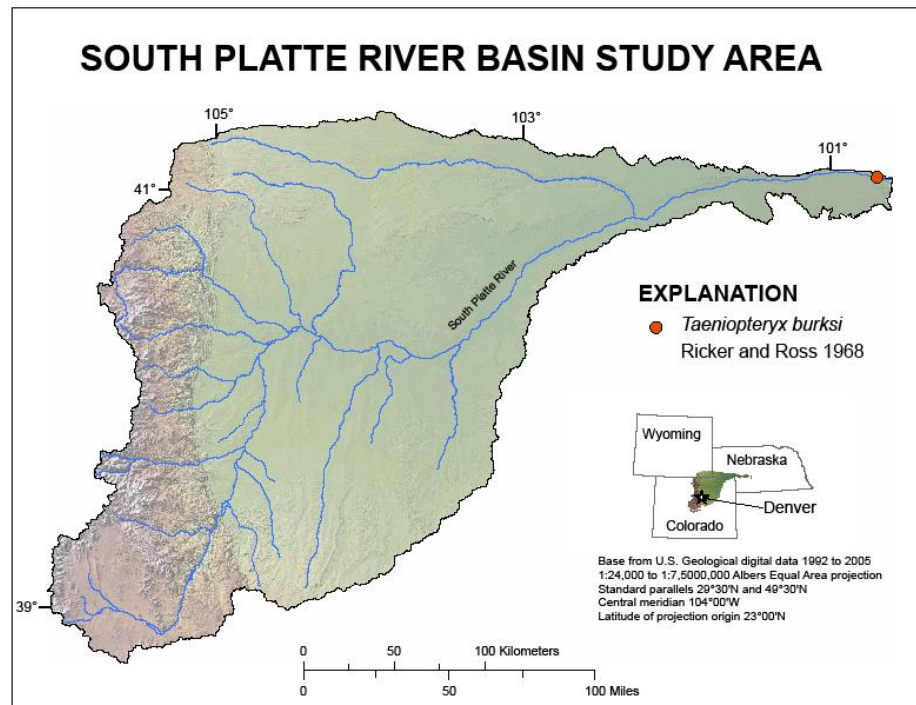
Distribution of *Doddsia occidentalis* collections in the South Platte River Basin.



Distribution of *Taenionema pacifica* collections in the South Platte River Basin.

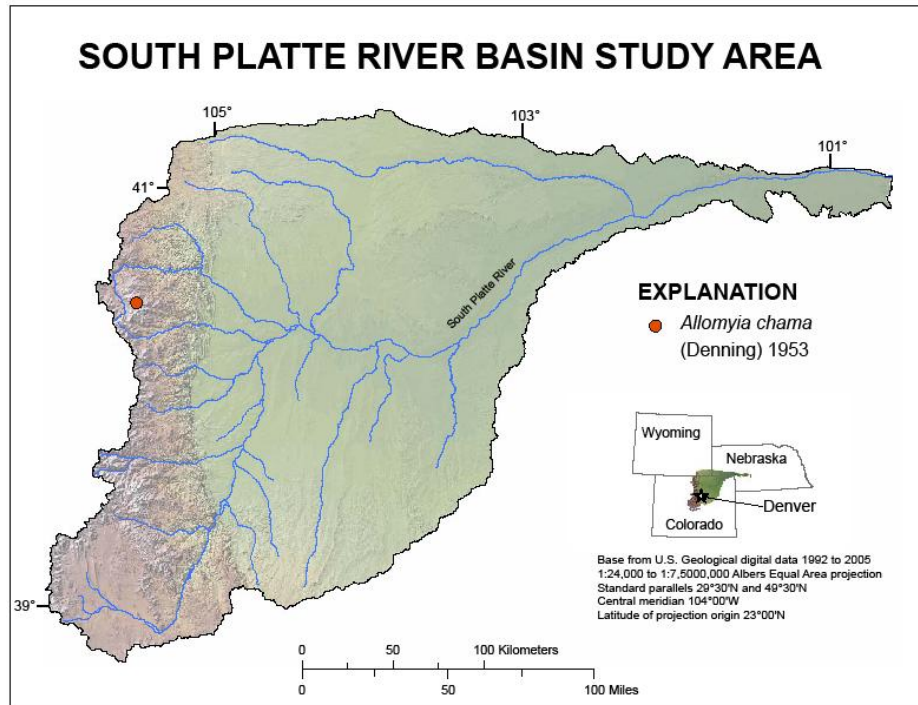


Distribution of *Taenionema pallidum* collections in the South Platte River Basin.

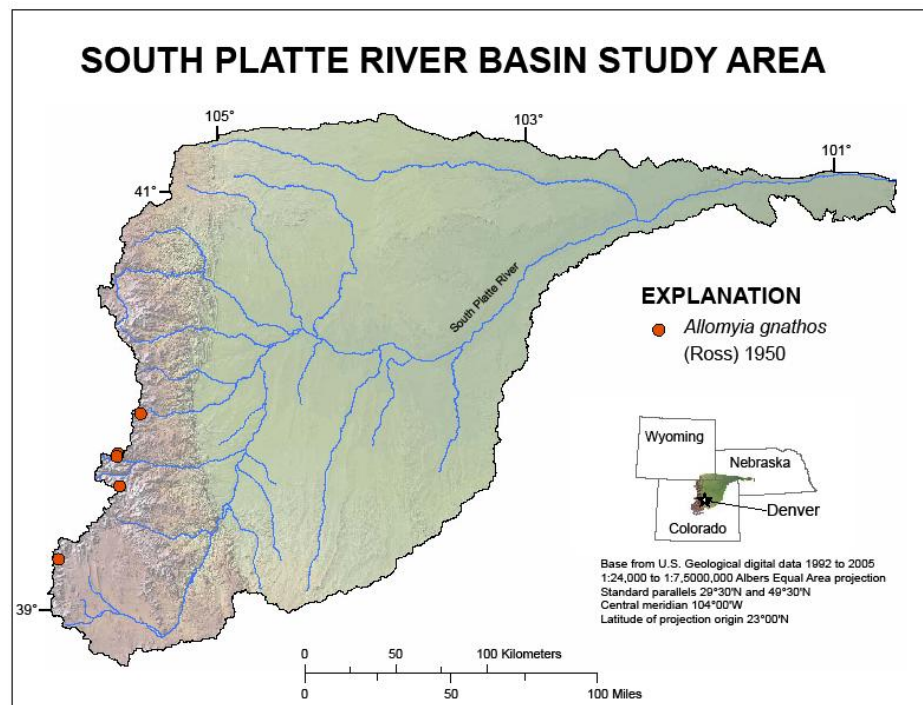


Distribution of *Taeniopteryx burksi* collections in the South Platte River Basin.

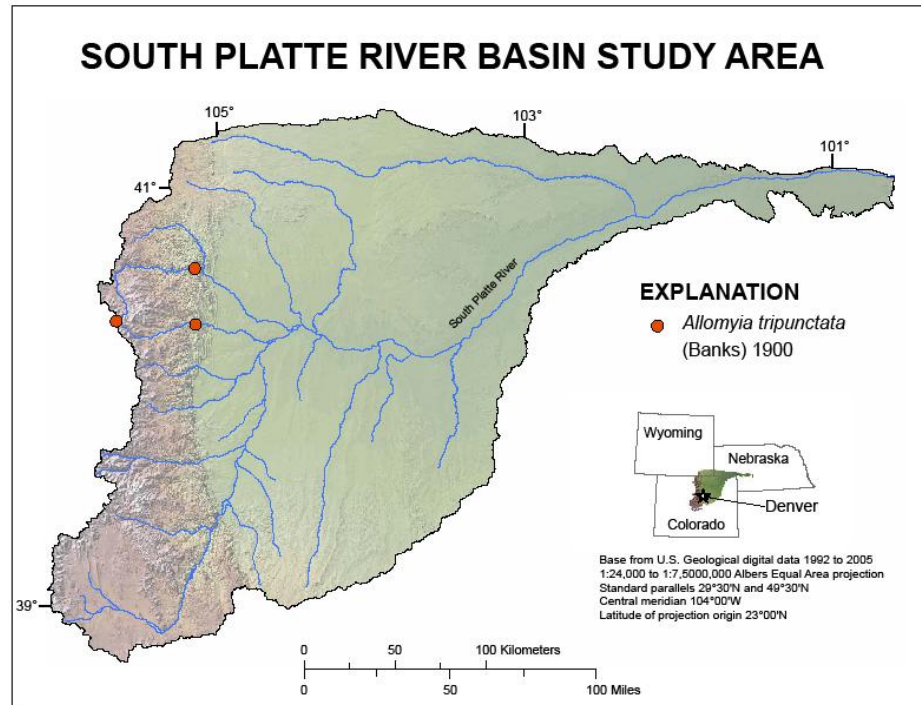
Appendix C
Caddisfly Distribution Maps



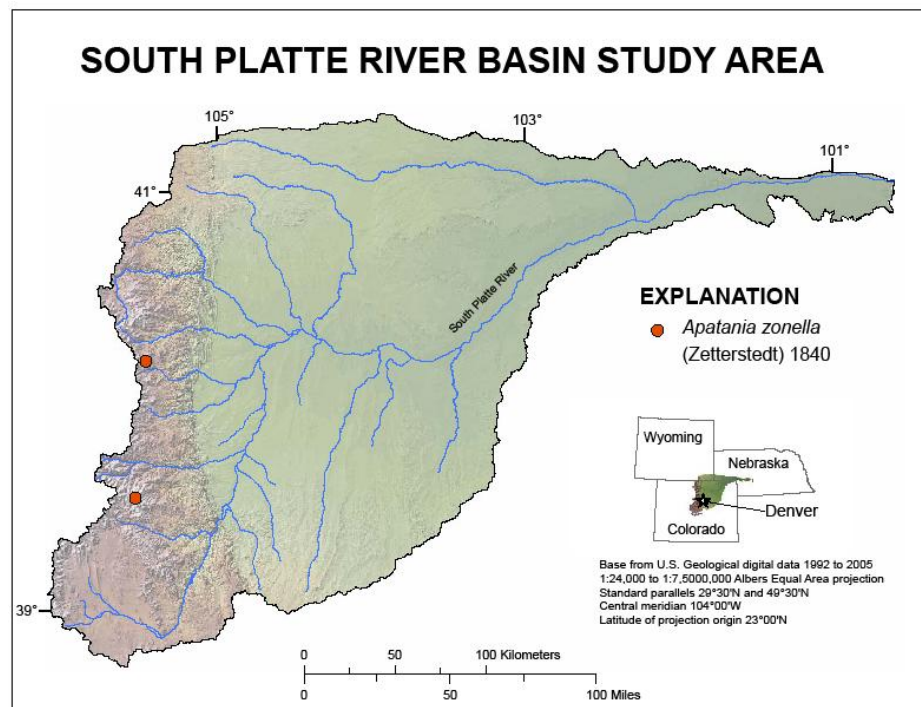
Distribution of *Allomyia chama* collections in the South Platte River Basin.



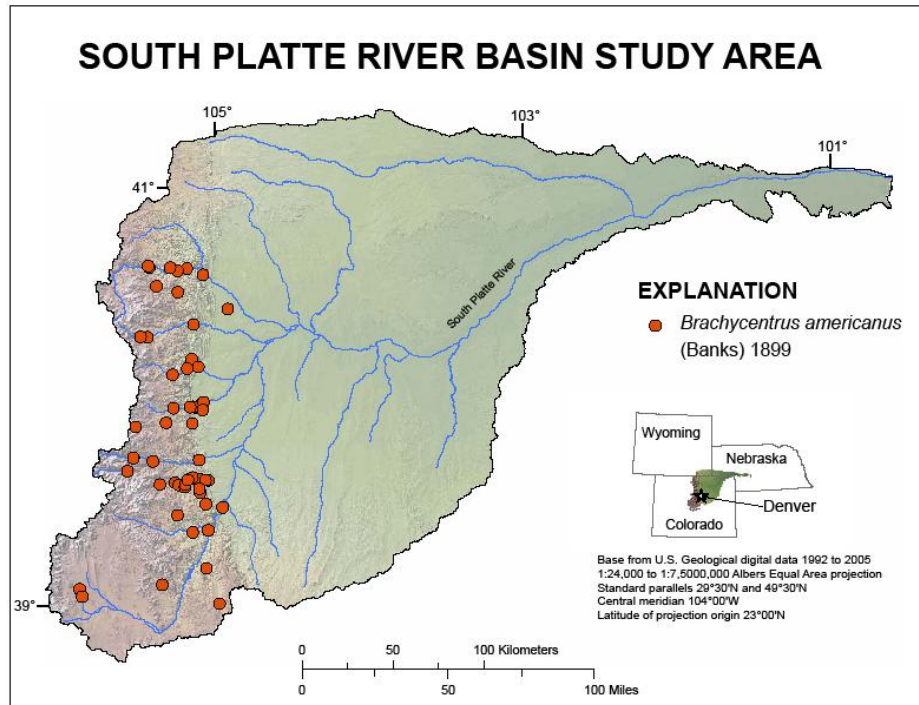
Distribution of *Allomyia gnathos* collections in the South Platte River Basin.



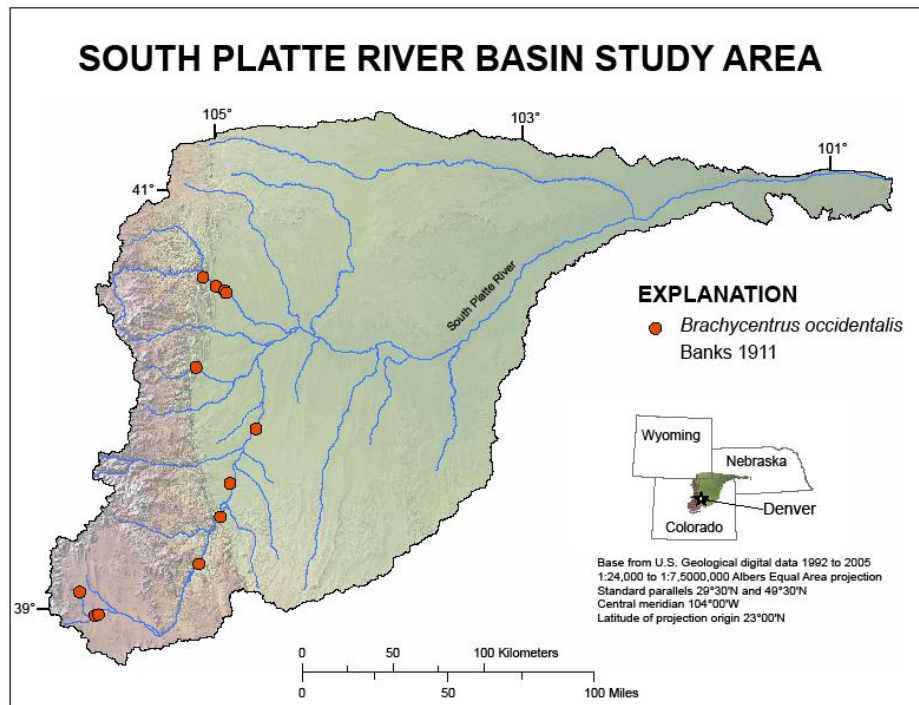
Distribution of *Allomyia tripunctata* collections in the South Platte River Basin.



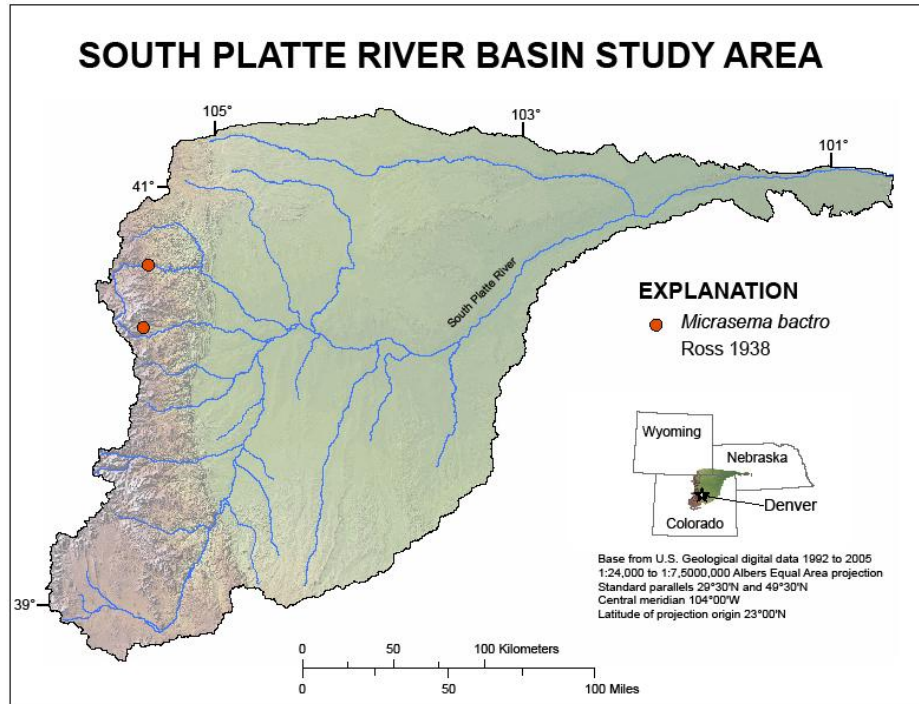
Distribution of *Apatania zonella* collections in the South Platte River Basin.



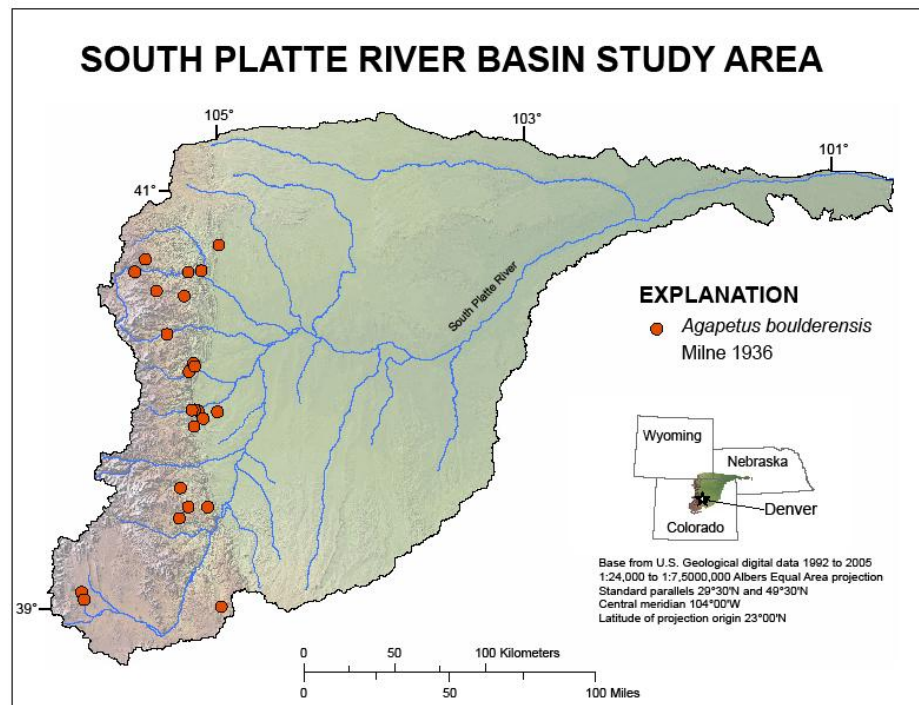
Distribution of *Brachycentrus americanus* collections in the South Platte River Basin.



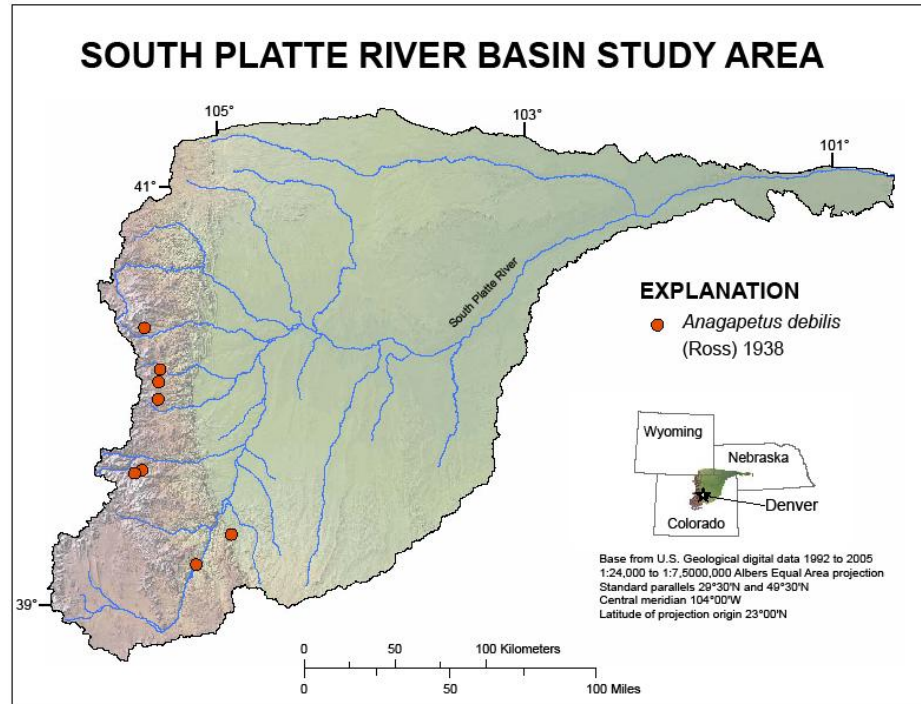
Distribution of *Brachycentrus occidentalis* collections in the South Platte River Basin.



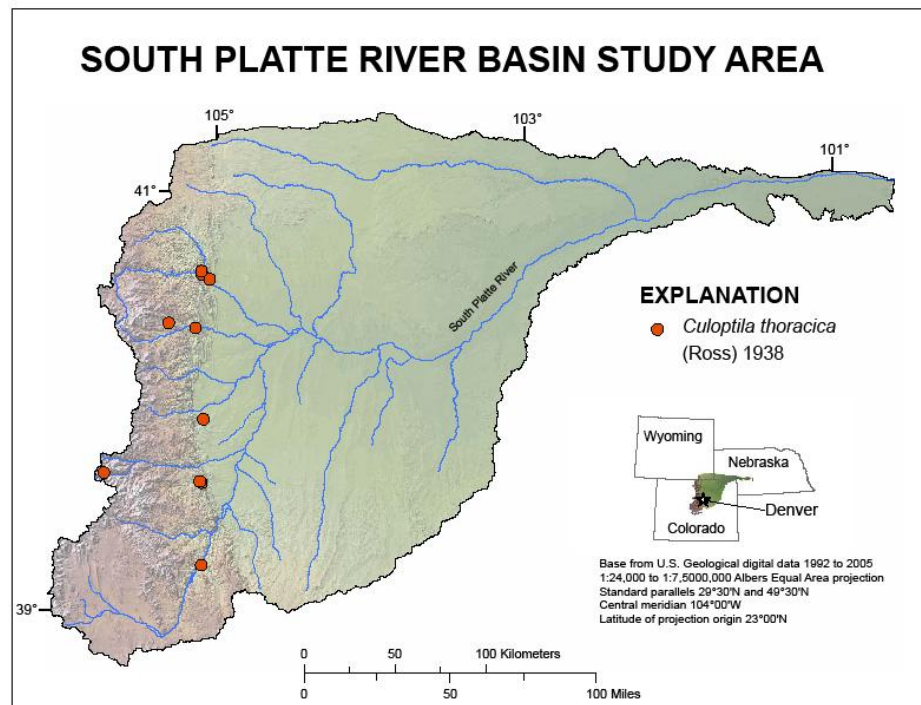
Distribution of *Micrasema bacro* collections in the South Platte River Basin.



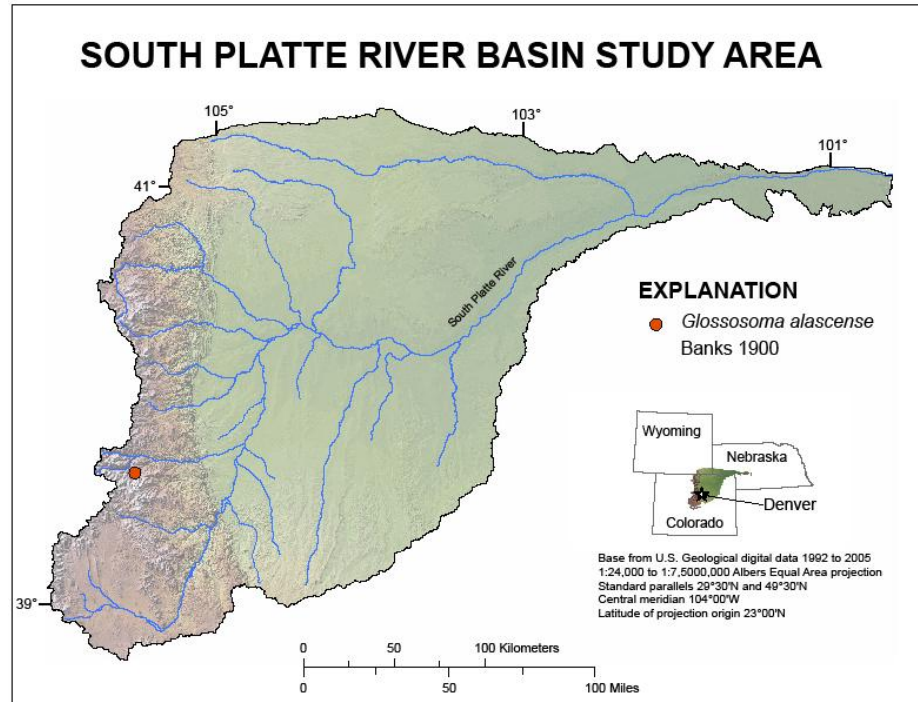
Distribution of *Agapetus boulderensis* collections in the South Platte River Basin.



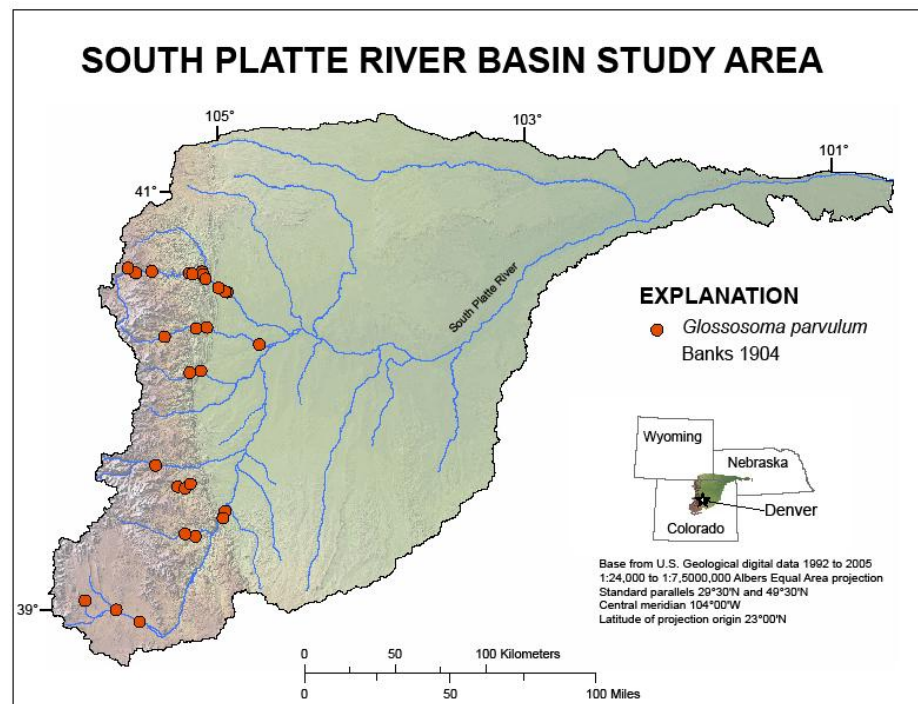
Distribution of *Anagapetus debilis* collections in the South Platte River Basin.



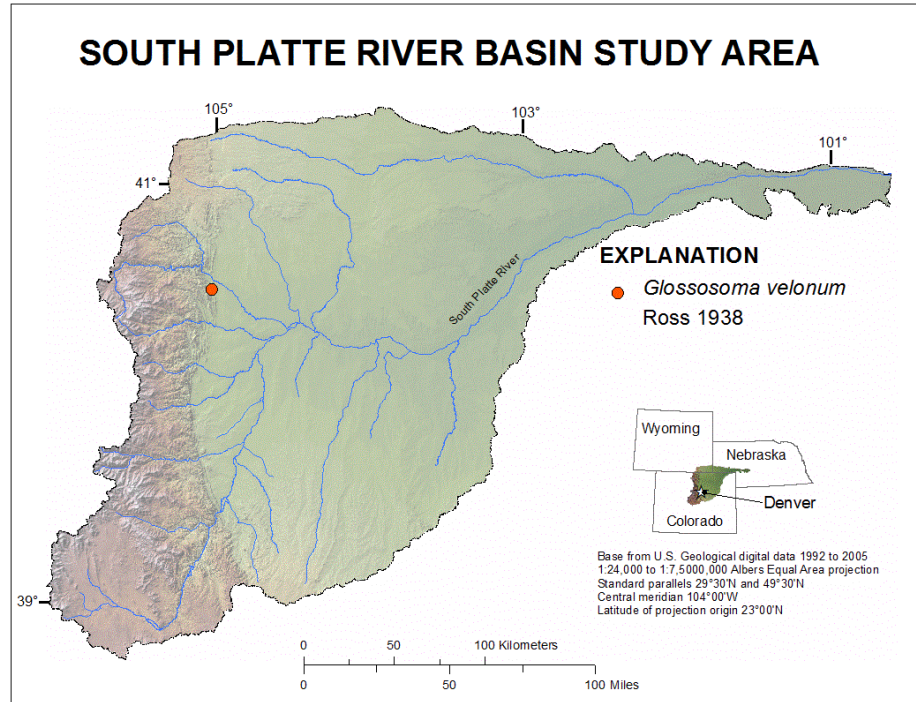
Distribution of *Culoptila thoracica* collections in the South Platte River Basin.



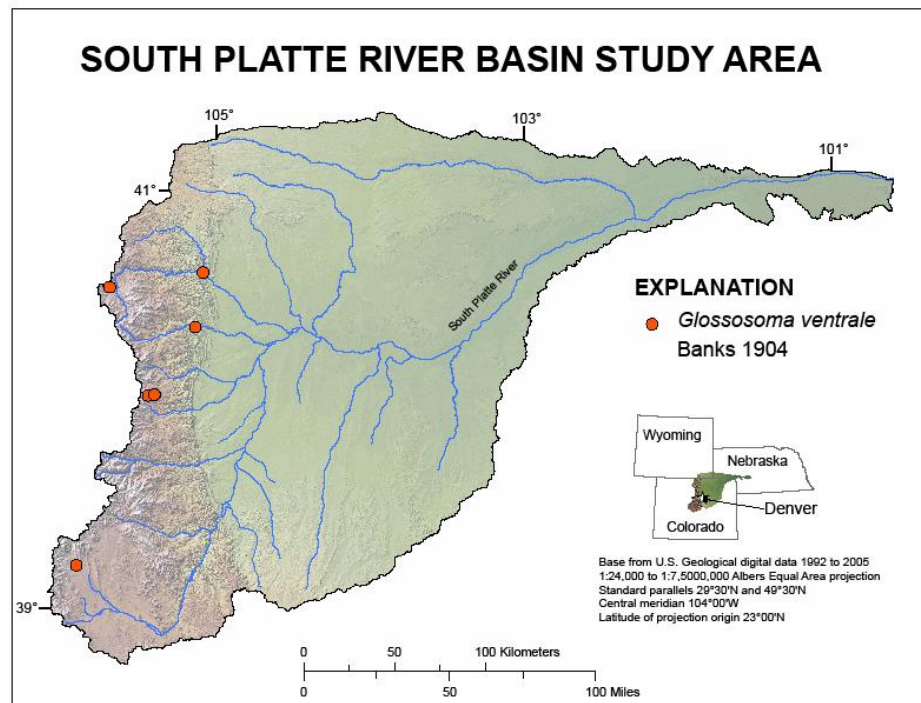
Distribution of *Glossosoma alascense* collections in the South Platte River Basin.



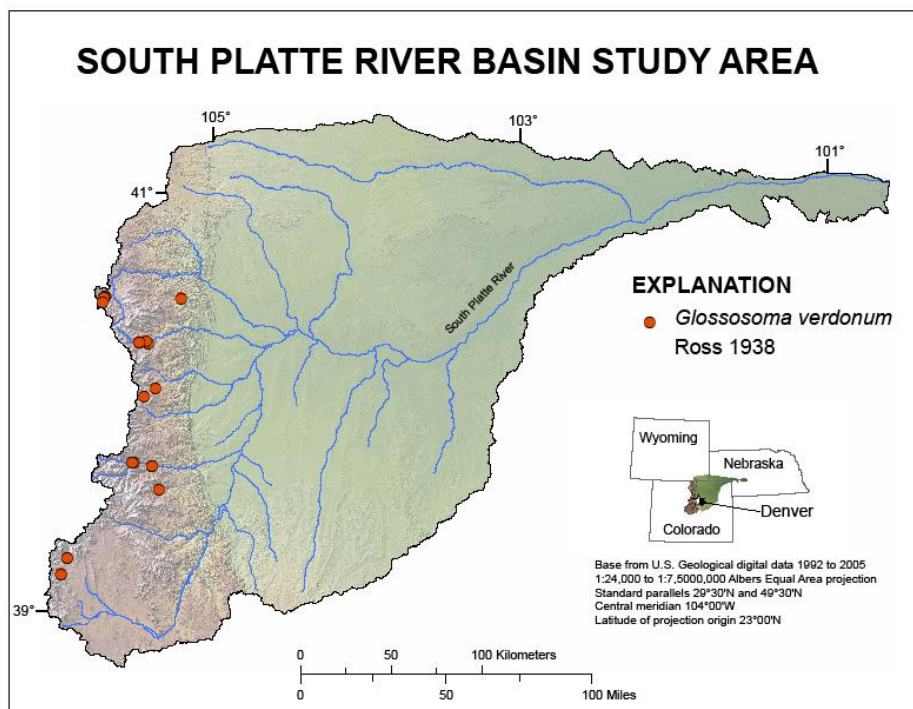
Distribution of *Glossosoma parvulum* collections in the South Platte River Basin.



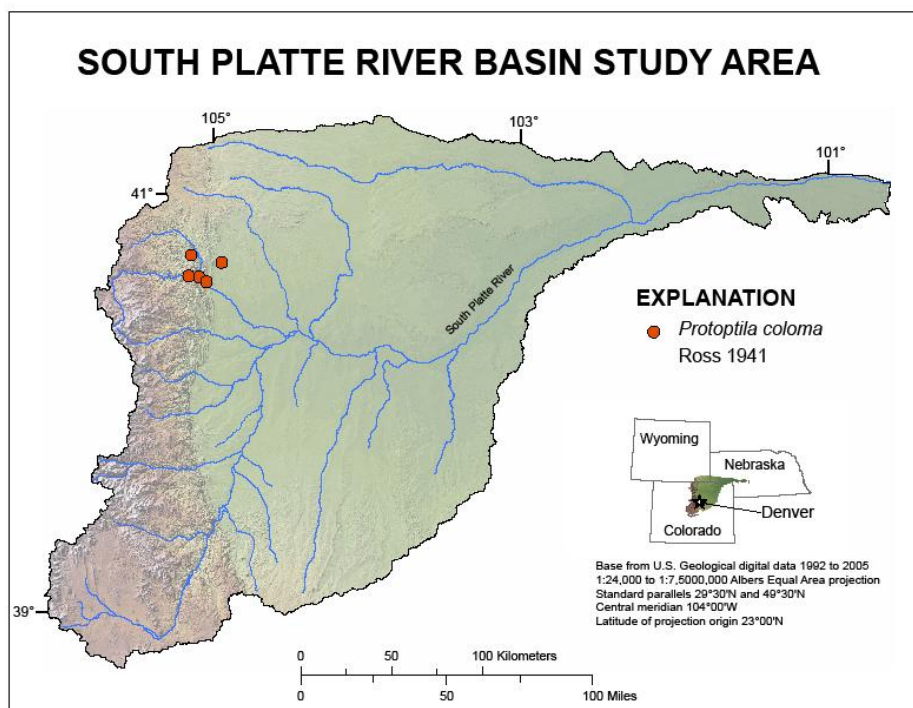
Distribution of *Glossosoma velonum* collections in the South Platte River Basin.



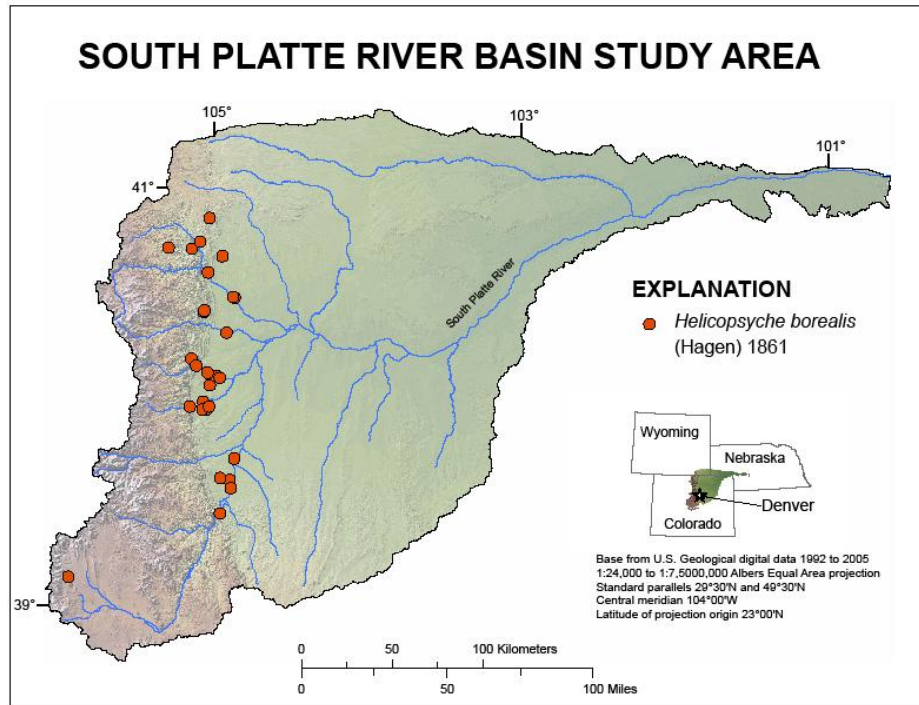
Distribution of *Glossosoma ventrale* collections in the South Platte River Basin.



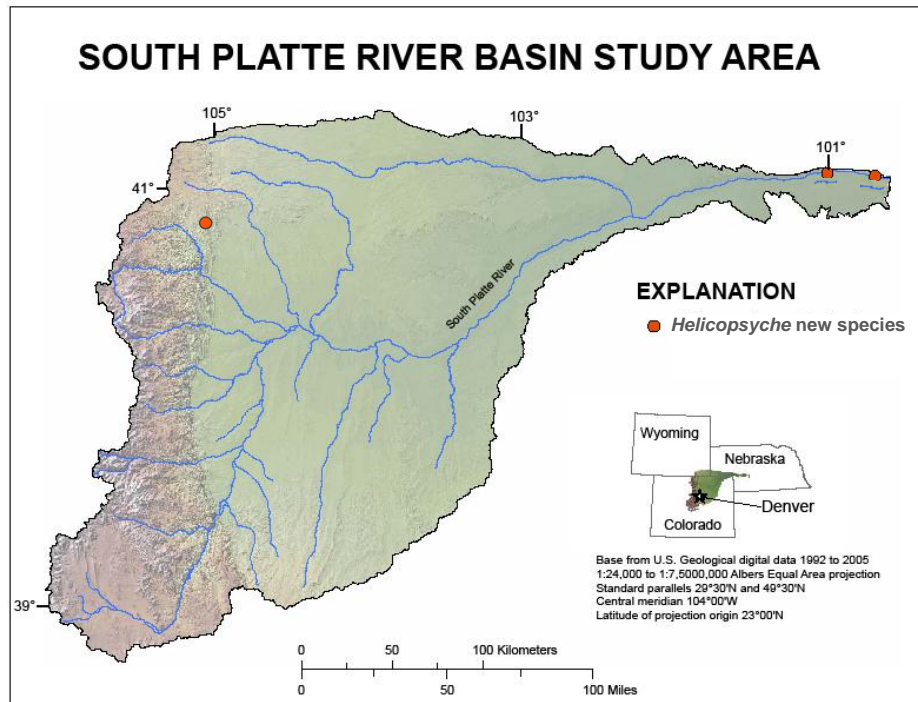
Distribution of *Glossosoma verdonum* collections in the South Platte River Basin.



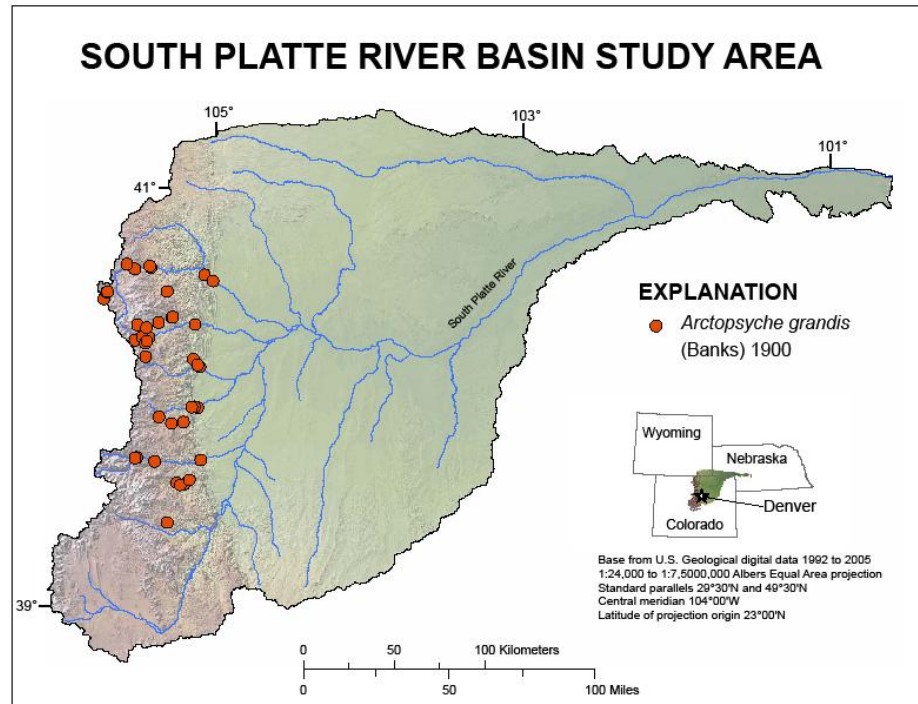
Distribution of *Protoptila coloma* collections in the South Platte River Basin.



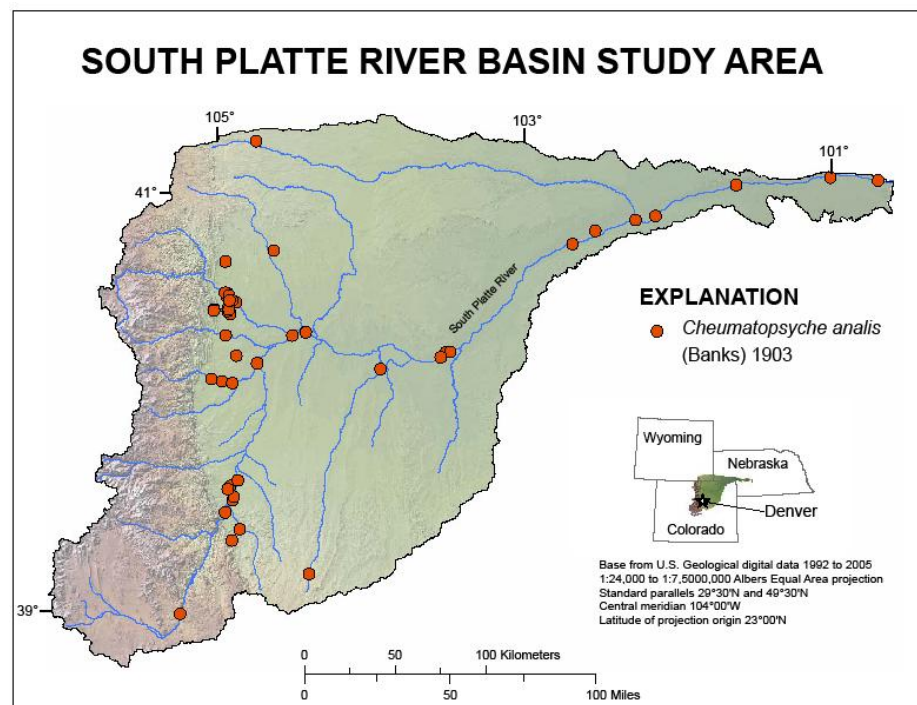
Distribution of *Helicopsyche borealis* collections in the South Platte River Basin.



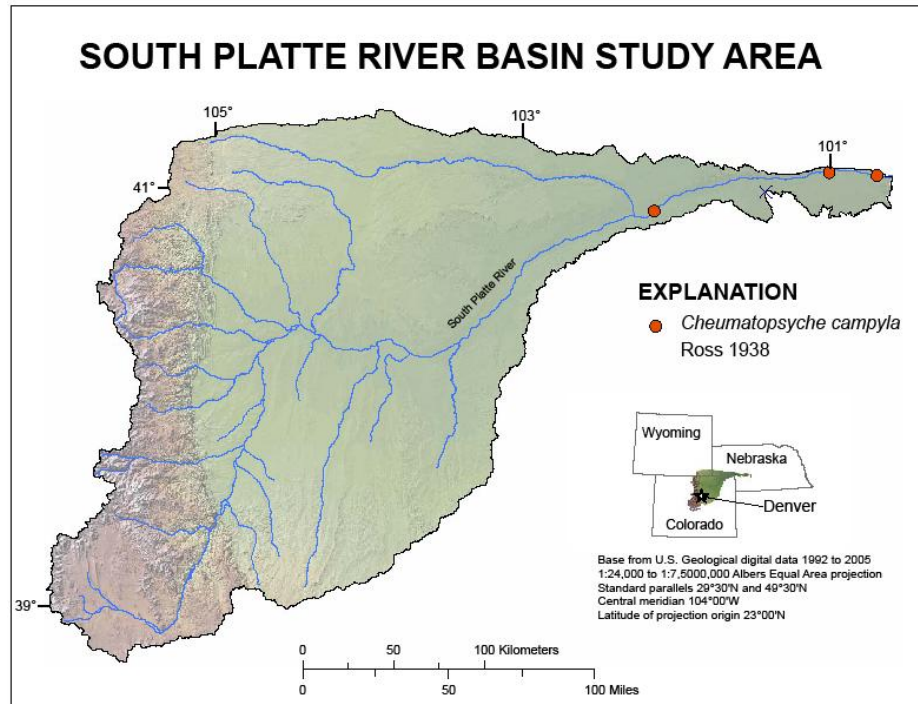
Distribution of *Helicopsyche* new species collections in the South Platte River Basin.



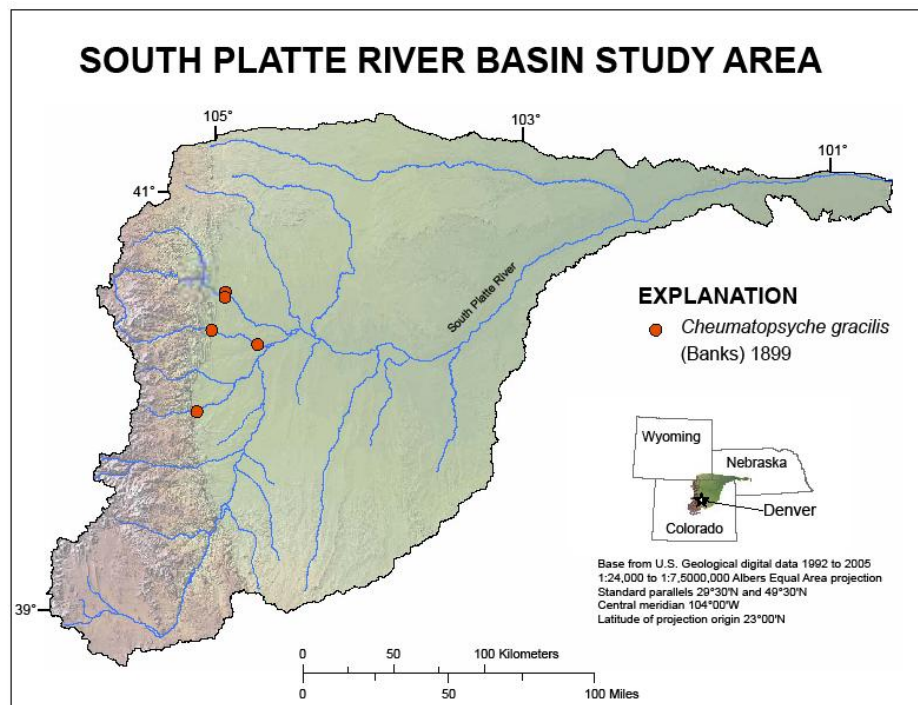
Distribution of *Arctopsyche grandis* collections in the South Platte River Basin.



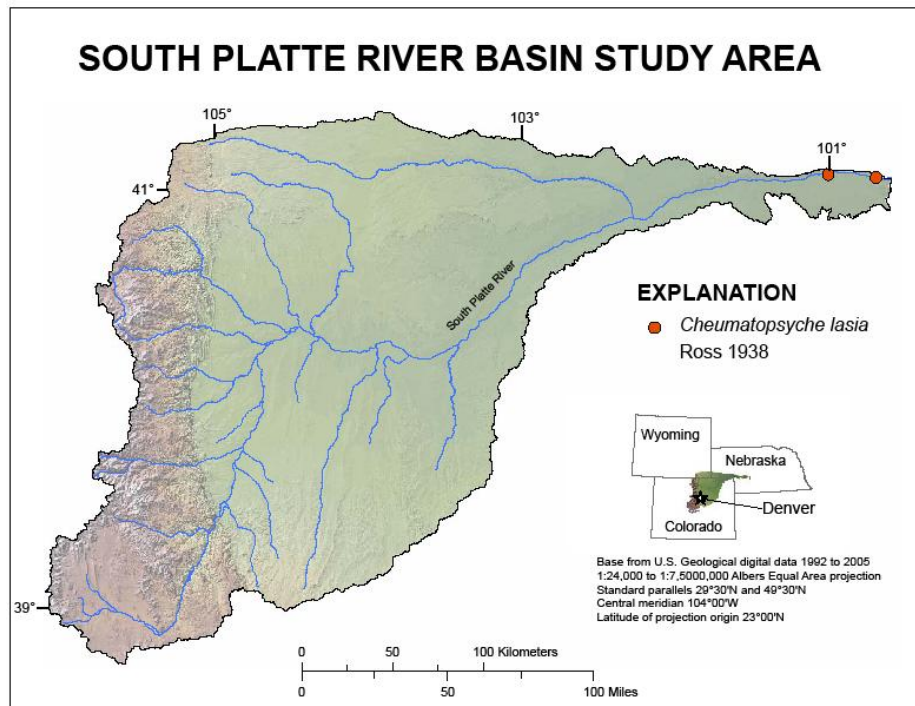
Distribution of *Cheumatopsyche analis* collections in the South Platte River Basin.



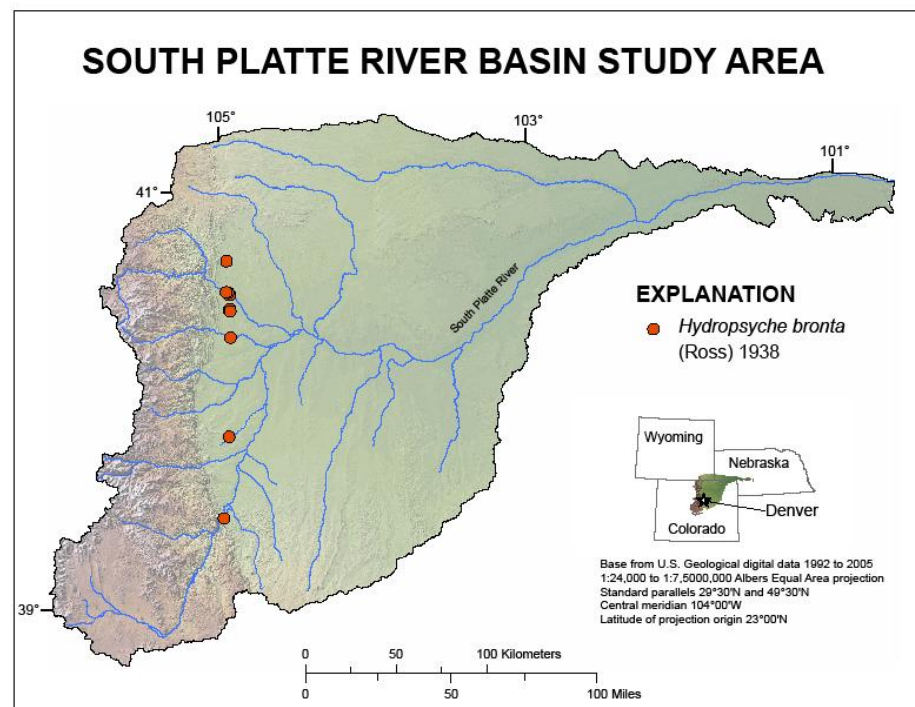
Distribution of *Cheumatopsyche campyla* collections in the South Platte River Basin.



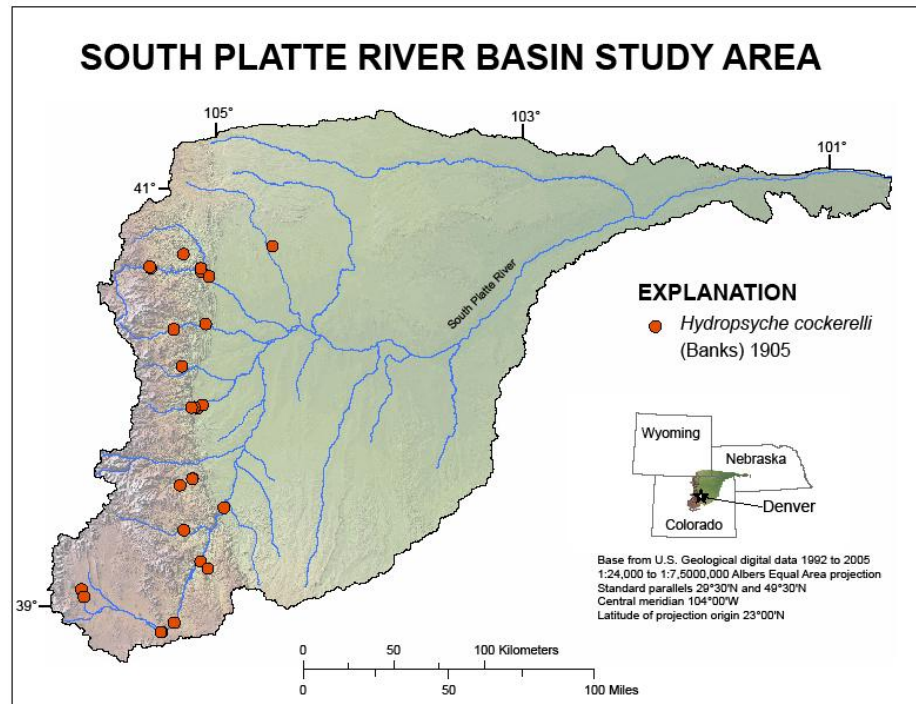
Distribution of *Cheumatopsyche gracilis* collections in the South Platte River Basin.



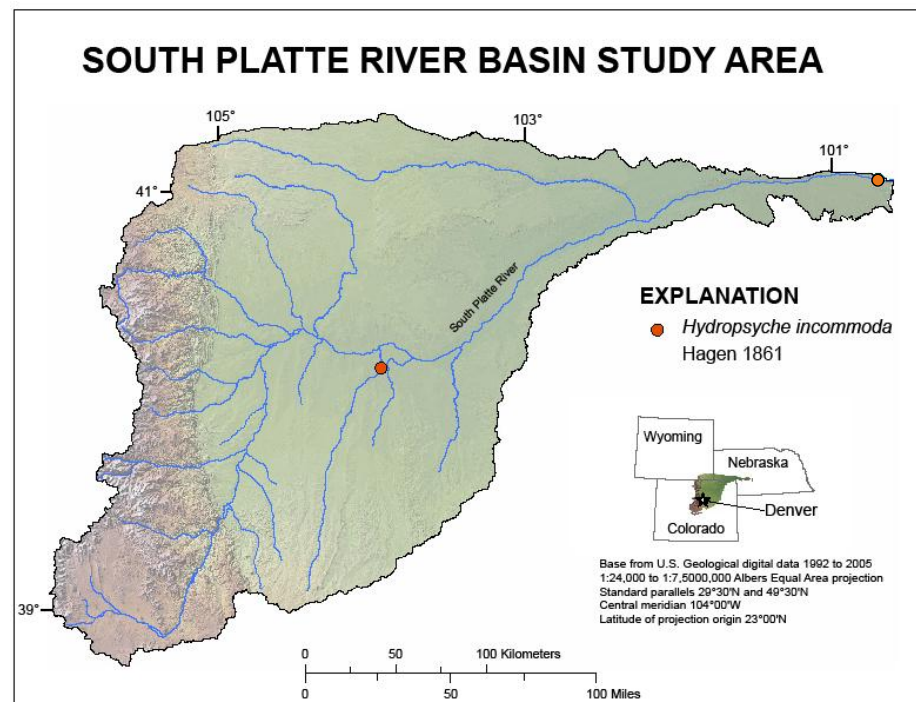
Distribution of *Cheumatopsyche lasia* collections in the South Platte River Basin.



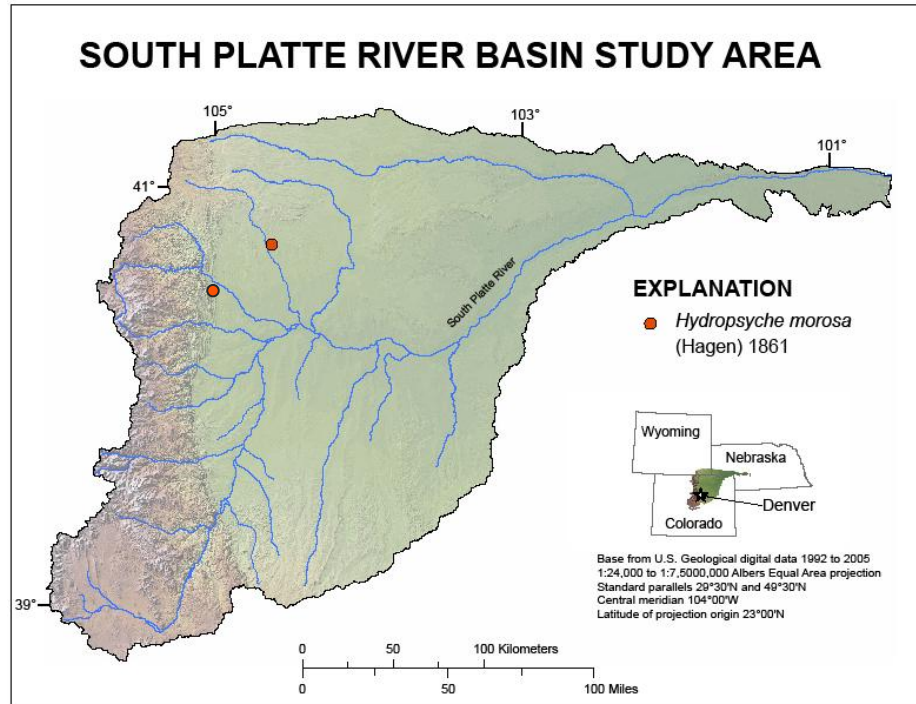
Distribution of *Hydropsyche bronta* collections in the South Platte River Basin.



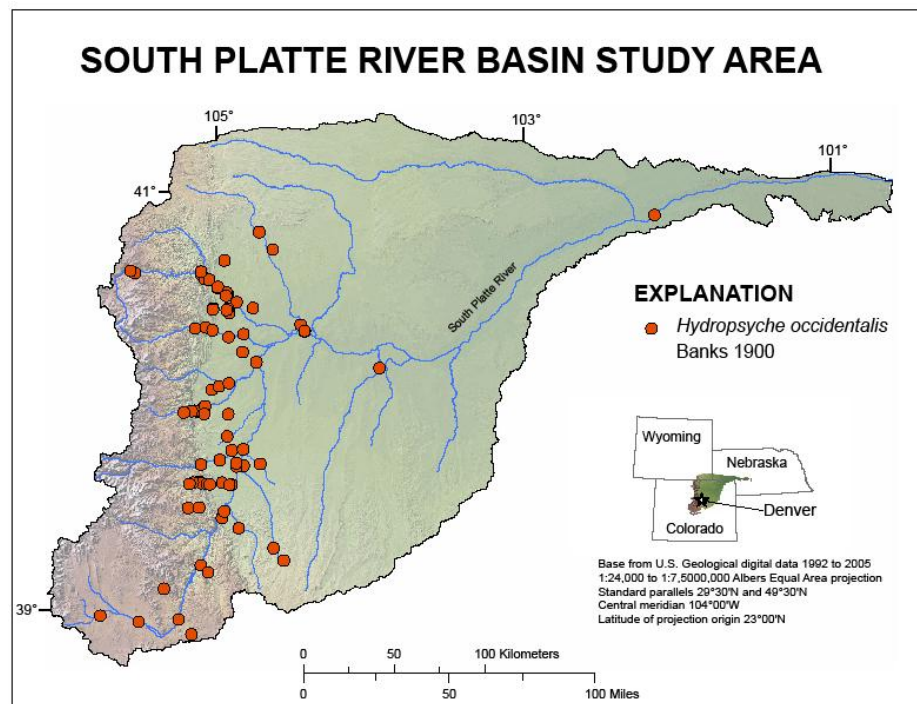
Distribution of *Hydropsyche cockerelli* collections in the South Platte River Basin.



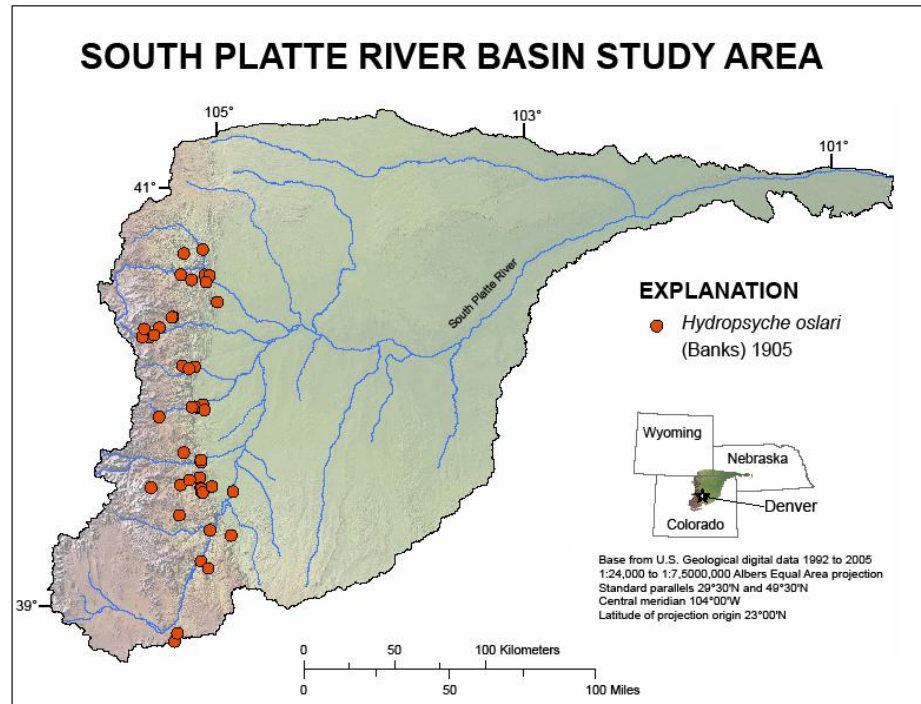
Distribution of *Hydropsyche incommoda* collections in the South Platte River Basin.



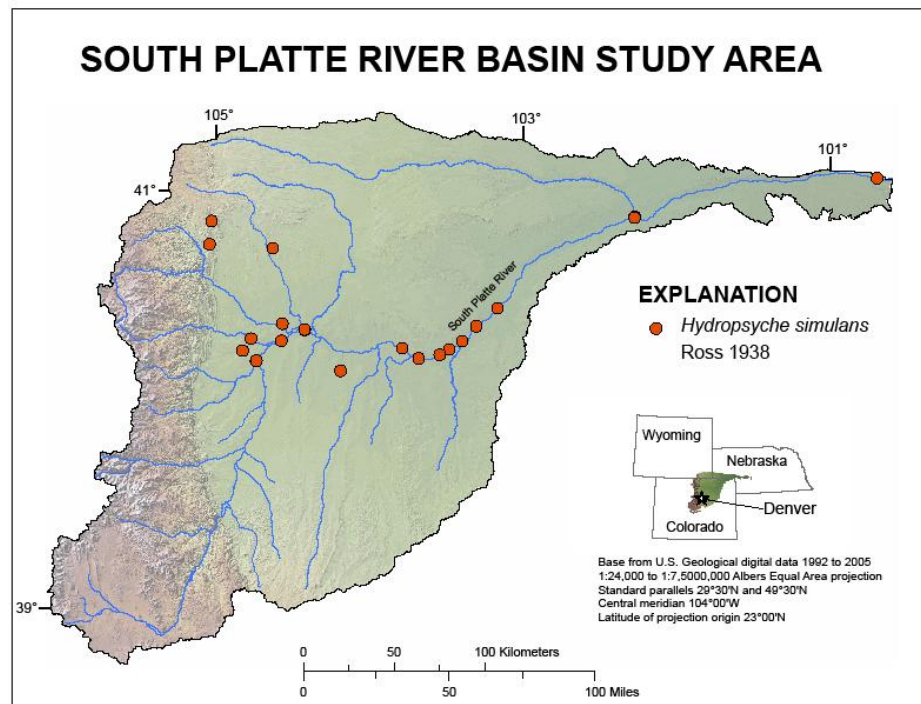
Distribution of *Hydropsyche morosa* collections in the South Platte River Basin.



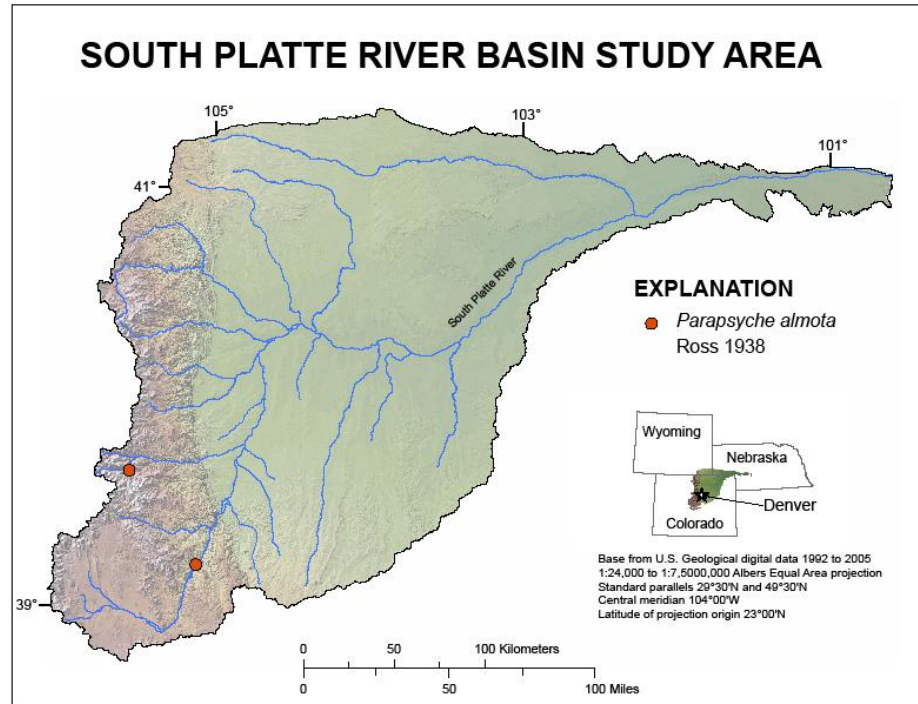
Distribution of *Hydropsyche occidentalis* collections in the South Platte River Basin.



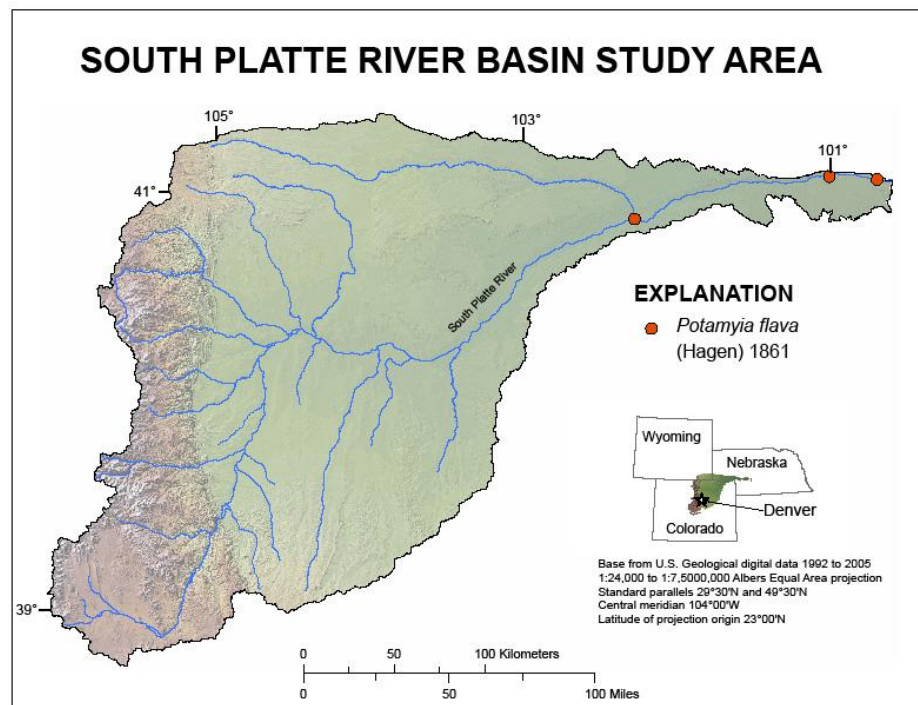
Distribution of *Hydropsyche oslari* collections in the South Platte River Basin.



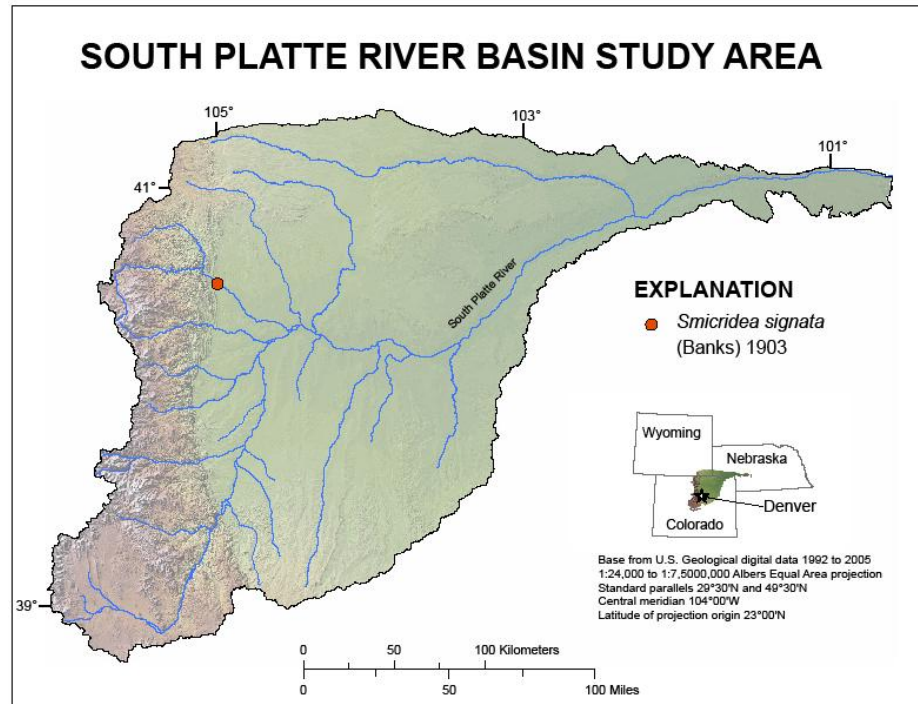
Distribution of *Hydropsyche simulans* collections in the South Platte River Basin.



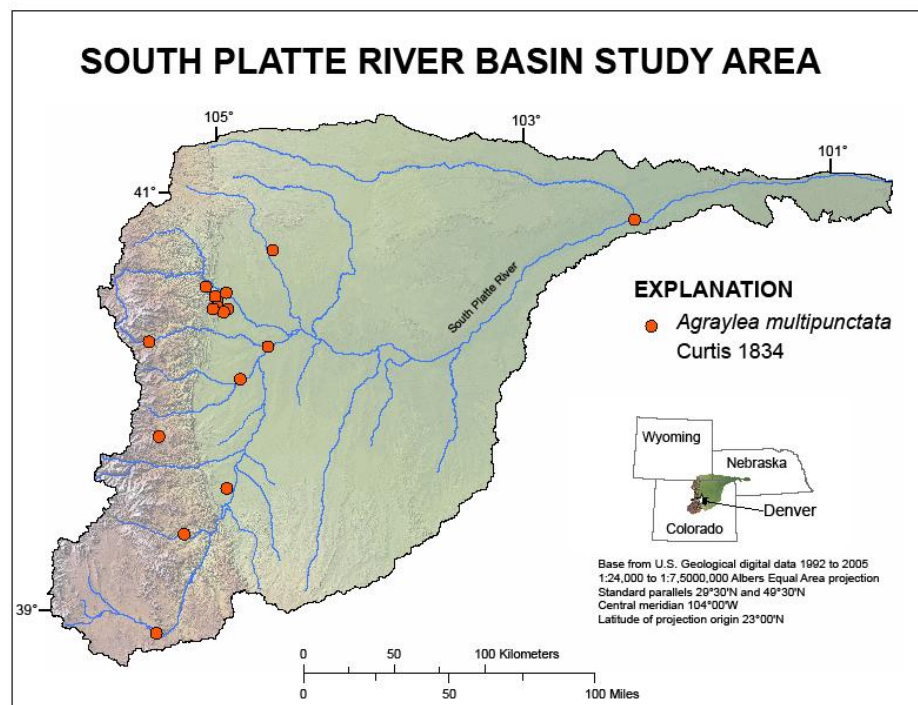
Distribution of *Parapsyche almota* collections in the South Platte River Basin.



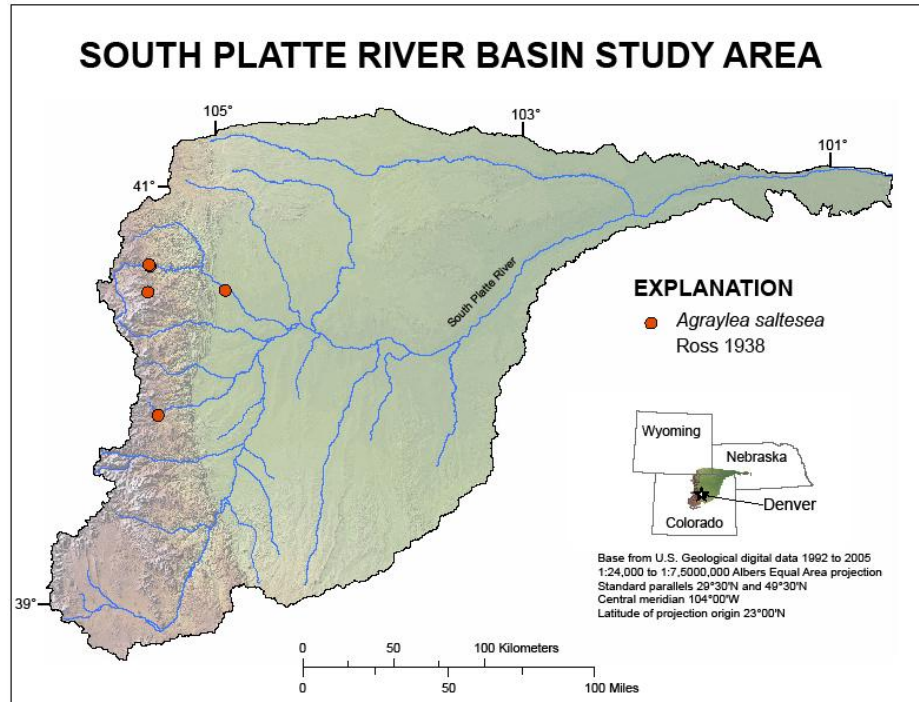
Distribution of *Potamyia flava* collections in the South Platte River Basin.



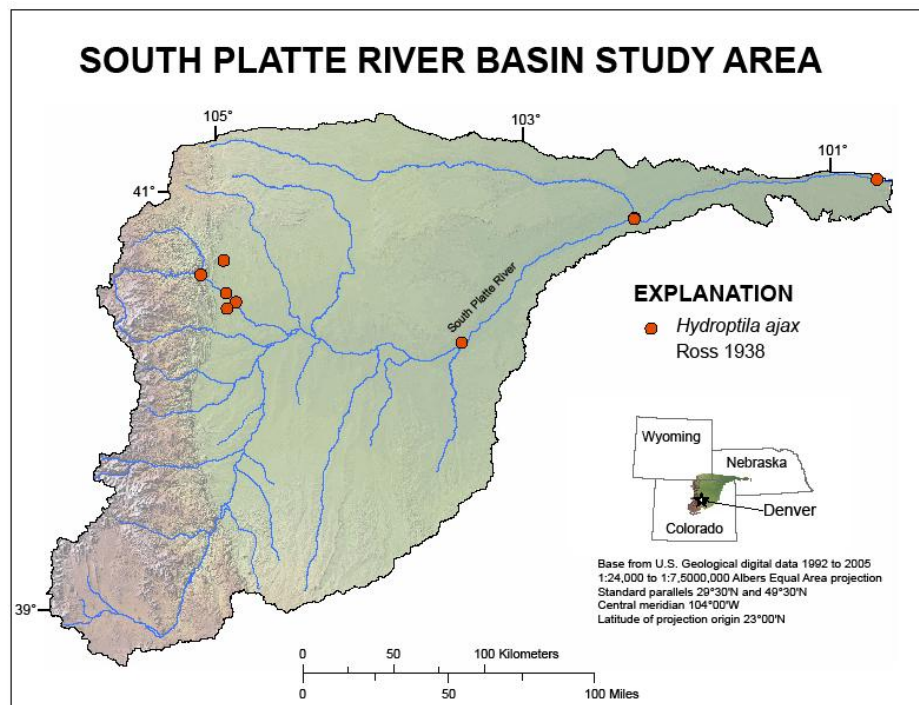
Distribution of *Smicridea signata* collections in the South Platte River Basin.



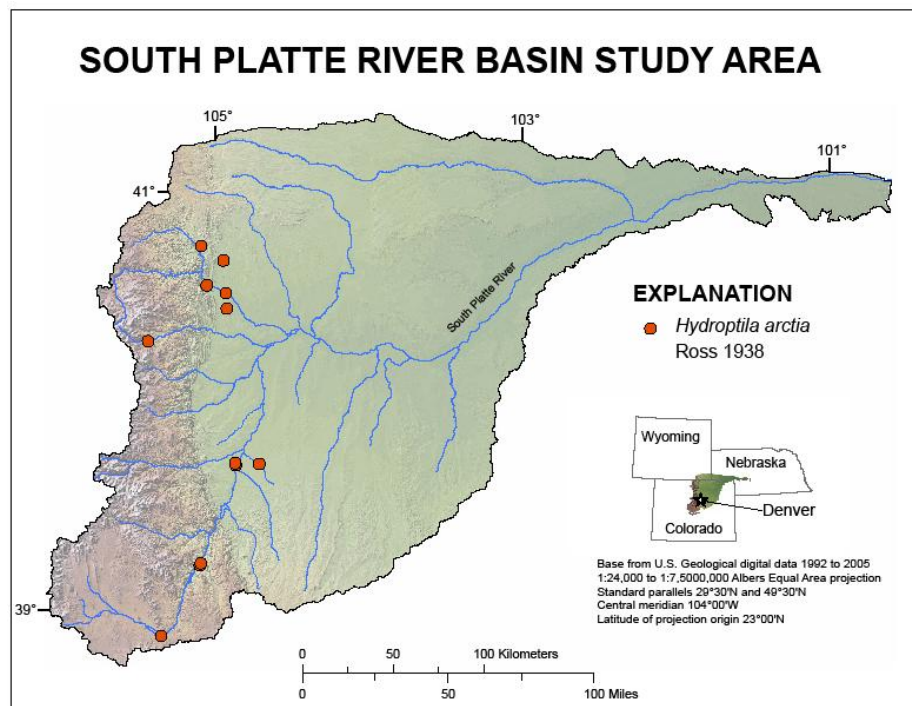
Distribution of *Agrylea multipunctata* collections in the South Platte River Basin.



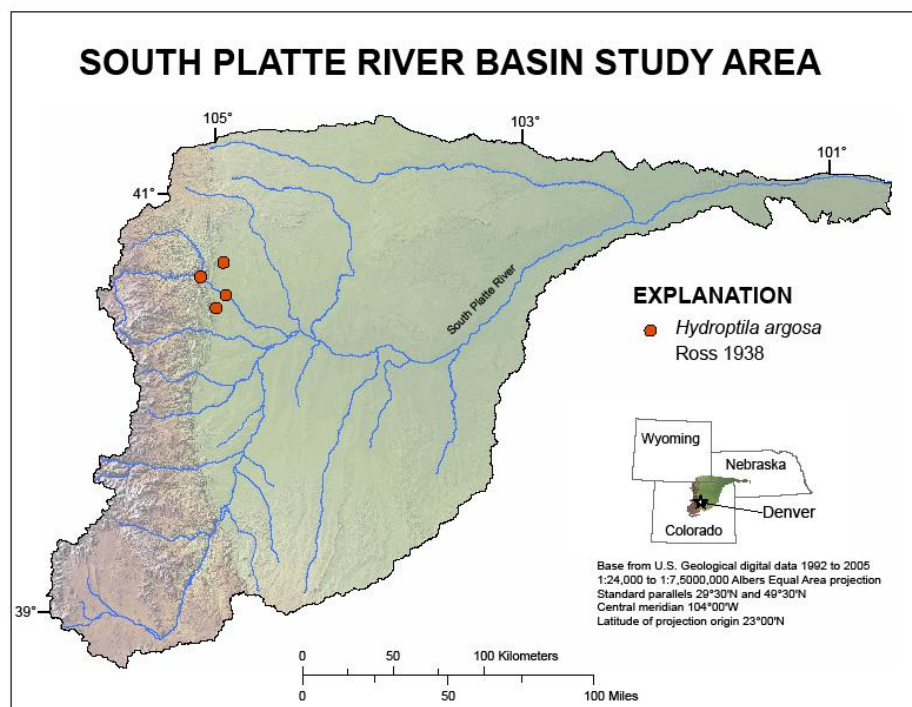
Distribution of *Agrylea salteseae* collections in the South Platte River Basin.



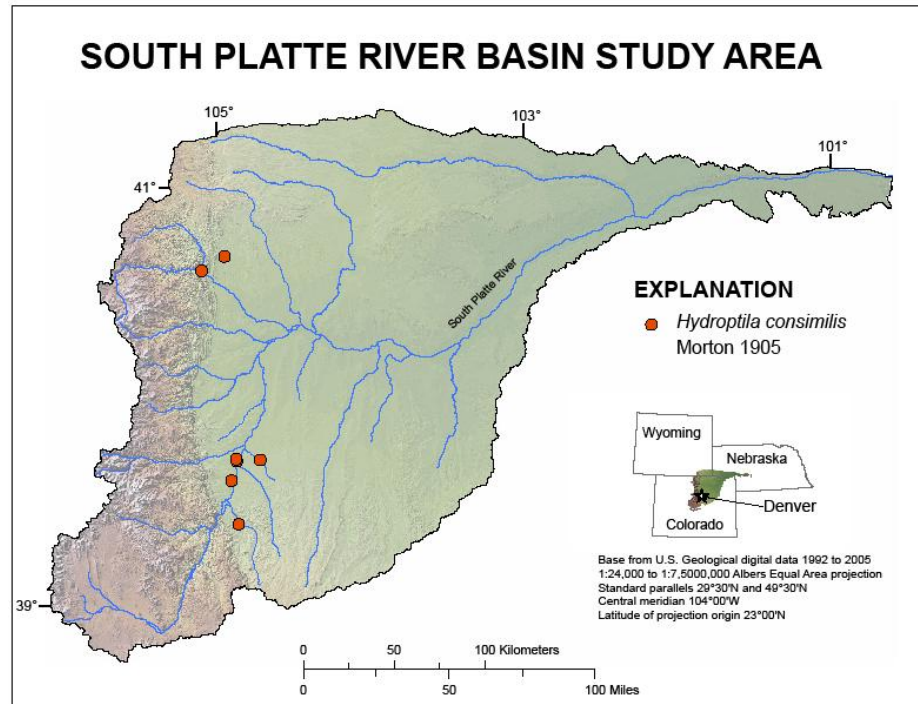
Distribution of *Hydroptila ajax* collections in the South Platte River Basin.



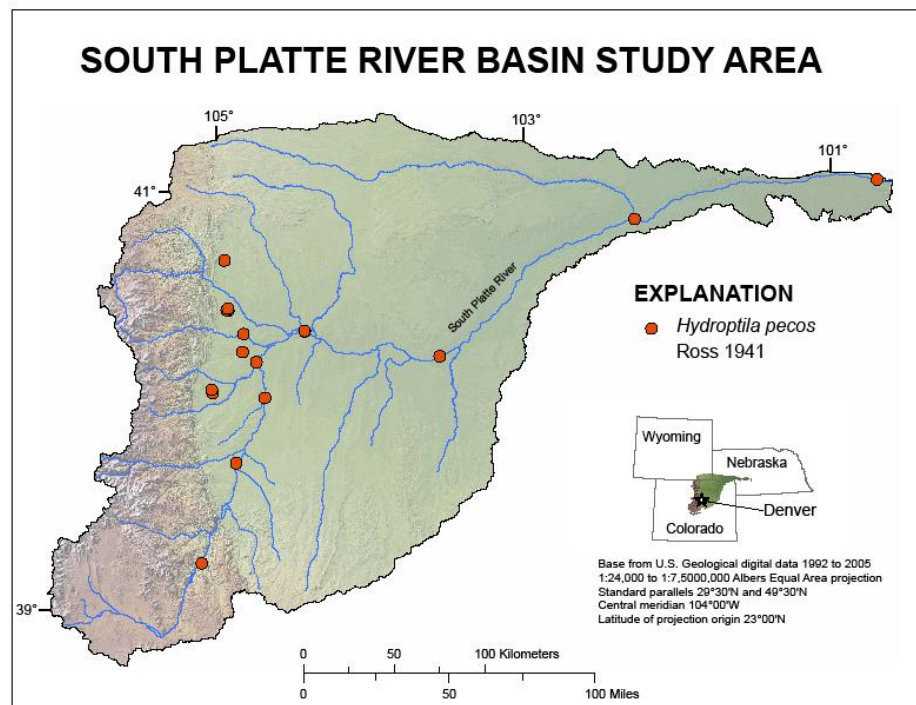
Distribution of *Hydrophtila arctia* collections in the South Platte River Basin.



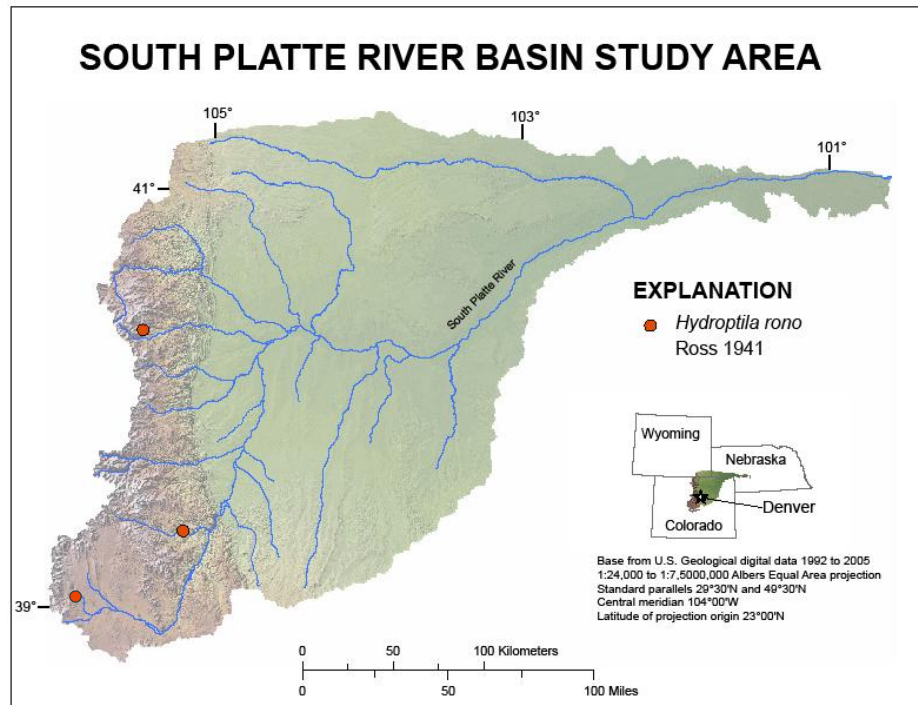
Distribution of *Hydrophtila argosa* collections in the South Platte River Basin.



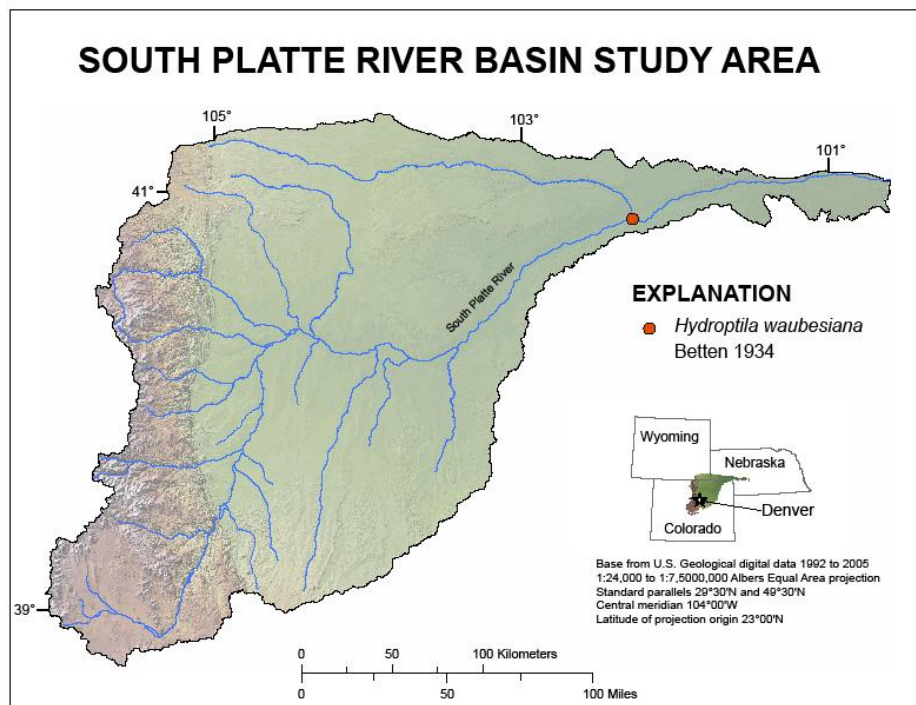
Distribution of *Hydroptila consimilis* collections in the South Platte River Basin.



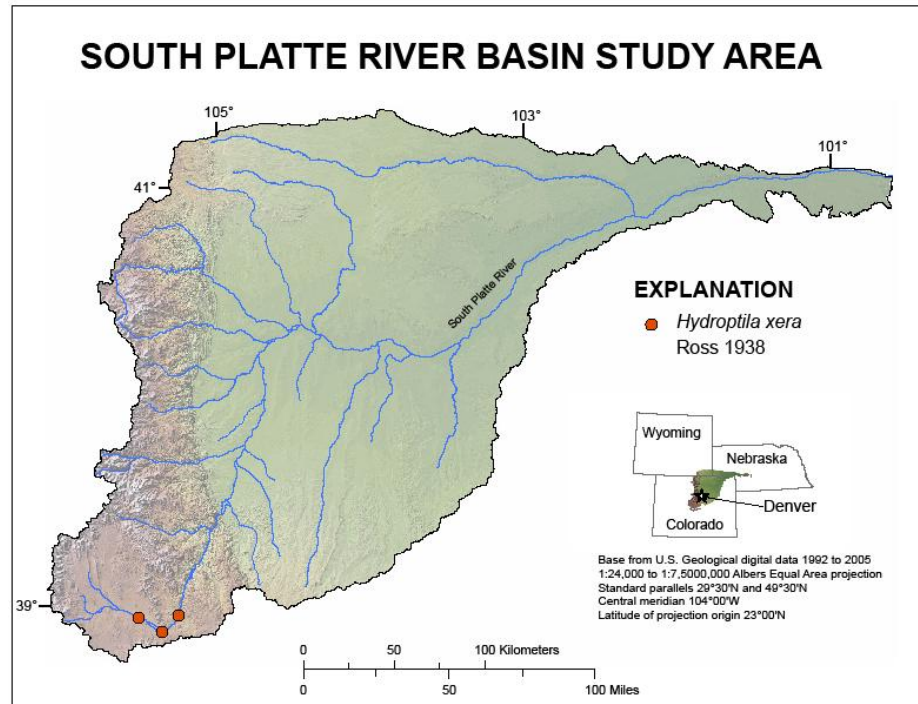
Distribution of *Hydroptila pecos* collections in the South Platte River Basin.



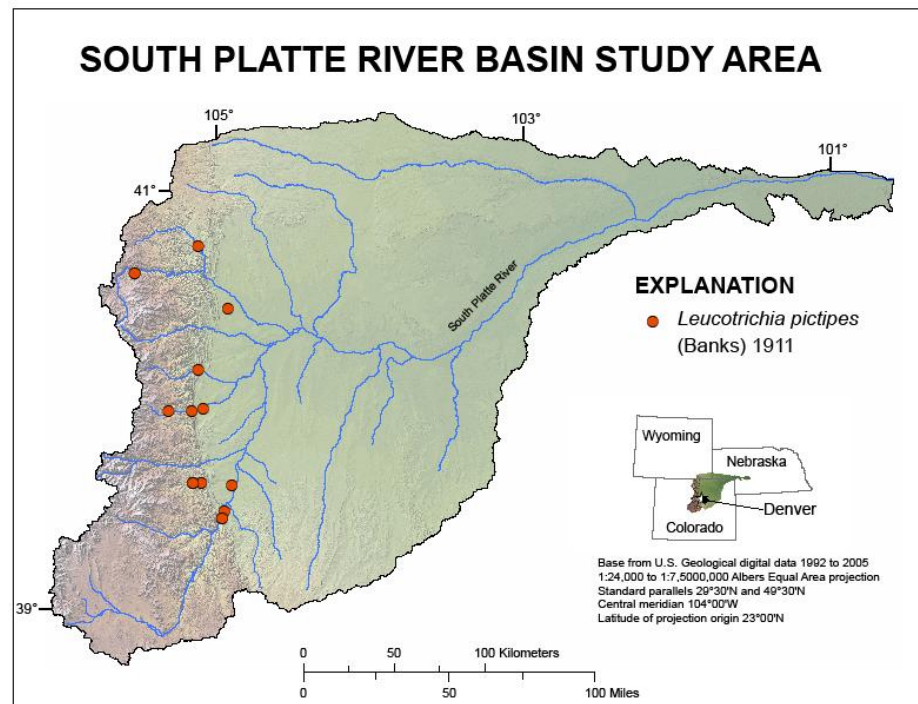
Distribution of *Hydroptila rono* collections in the South Platte River Basin.



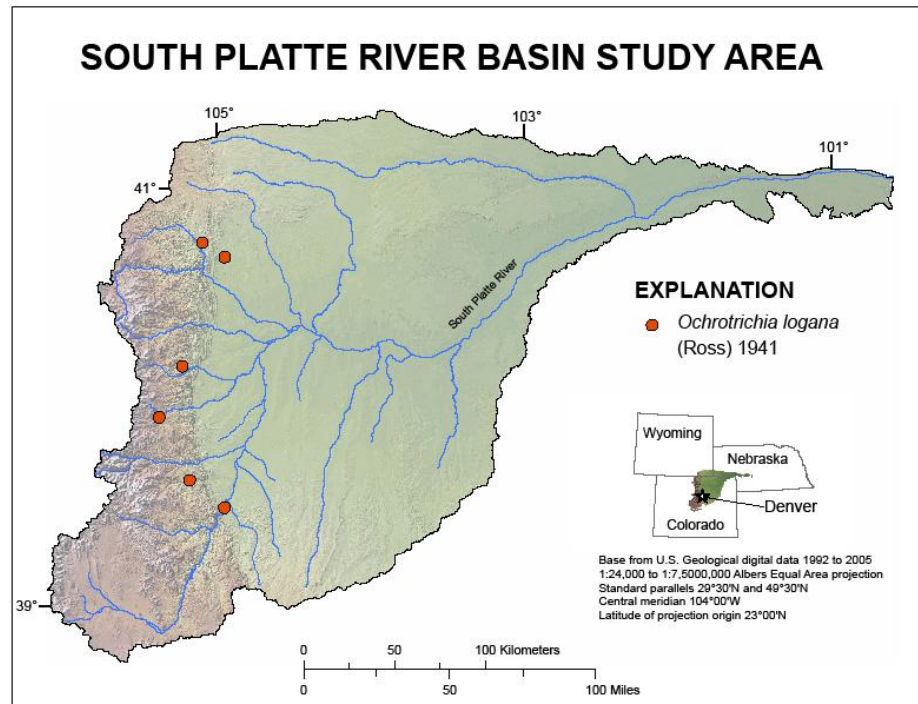
Distribution of *Hydroptila waubesiana* collections in the South Platte River Basin.



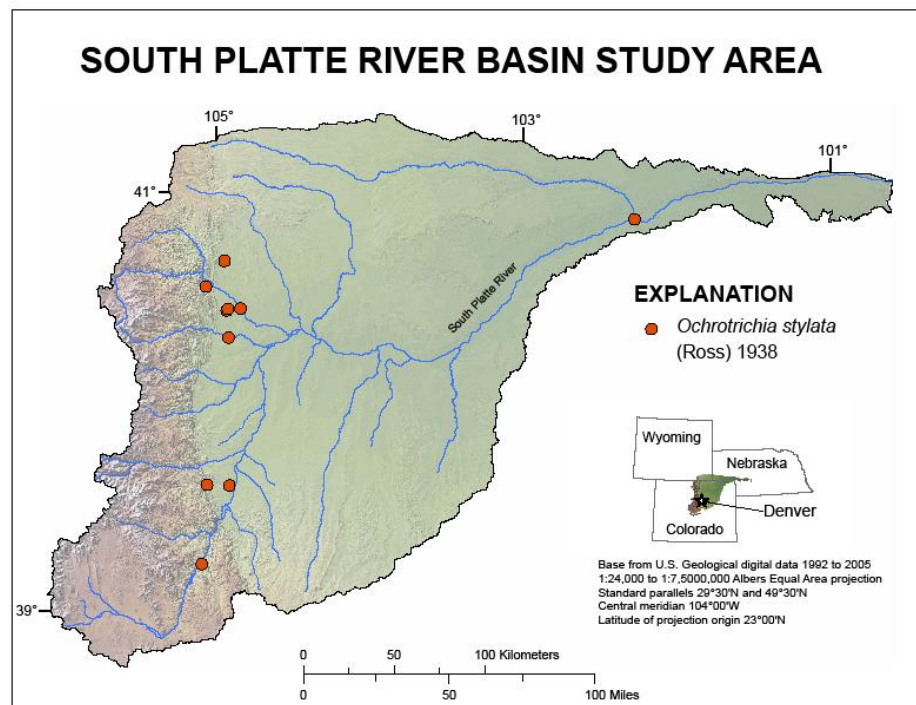
Distribution of *Hydropsyche xera* collections in the South Platte River Basin.



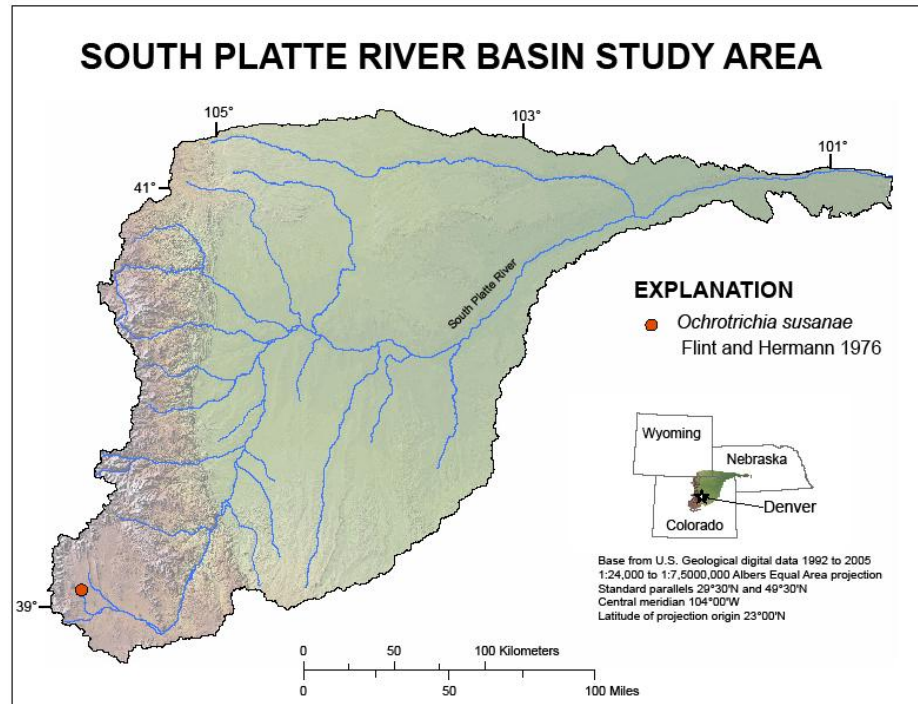
Distribution of *Leuctrichia pictipes* collections in the South Platte River Basin.



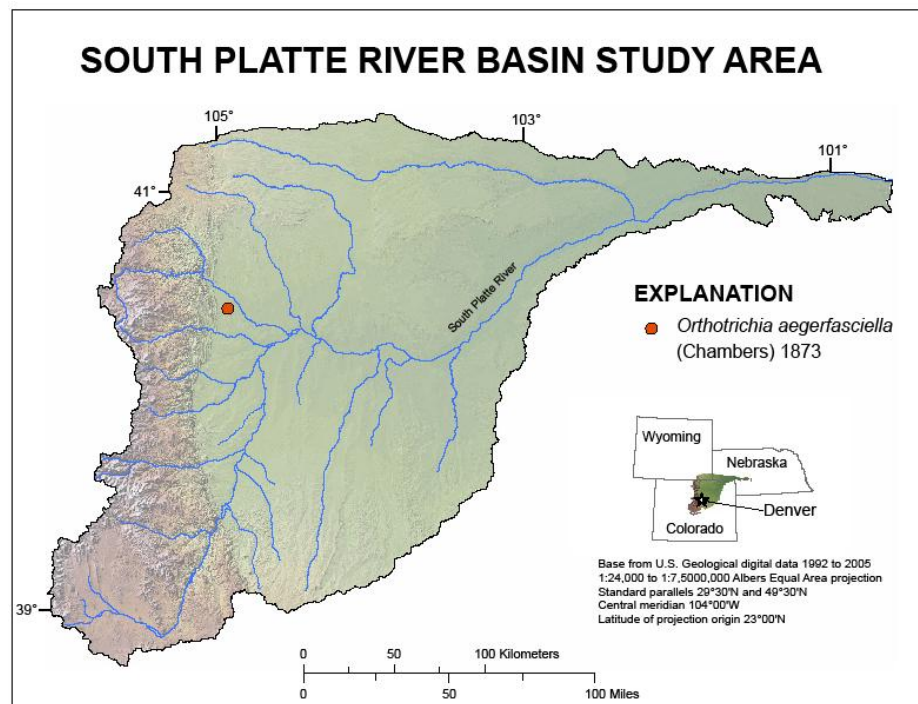
Distribution of *Ochrotrichia logana* collections in the South Platte River Basin.



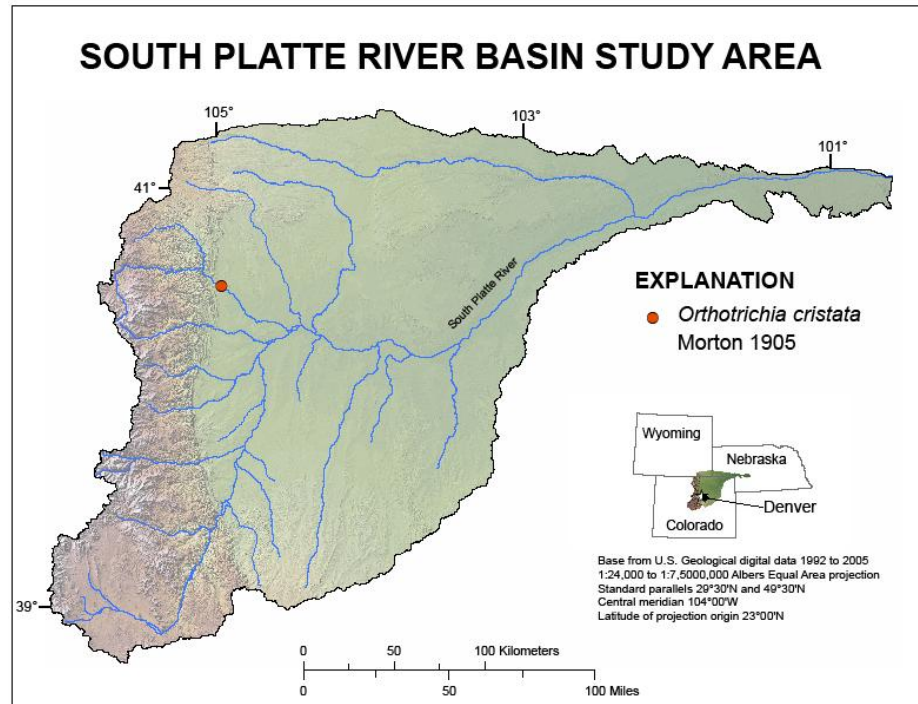
Distribution of *Ochrotrichia stylata* collections in the South Platte River Basin.



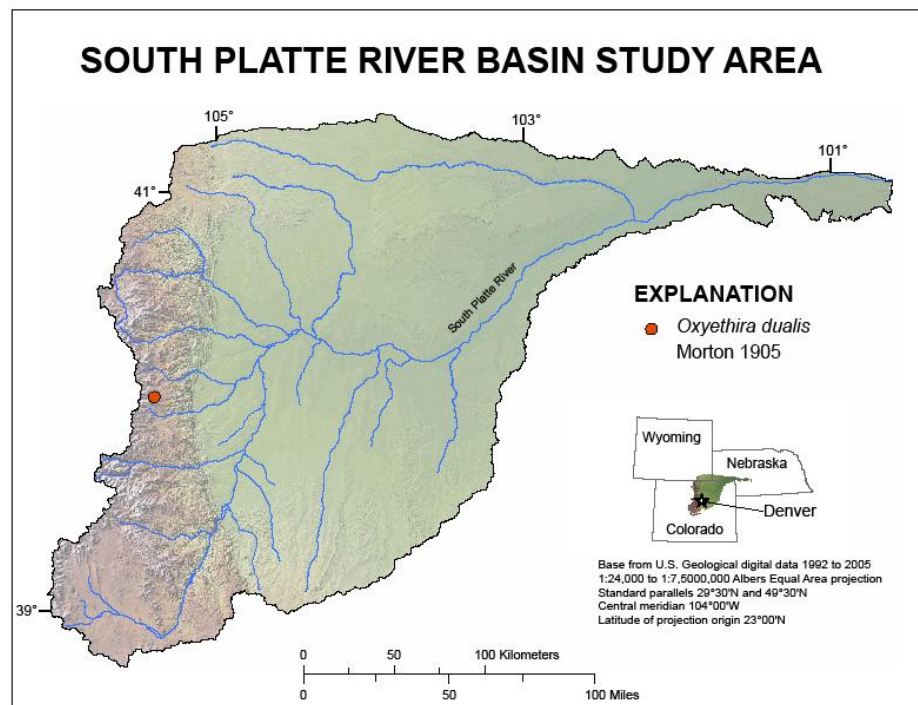
Distribution of *Ochrotrichia susanae* collections in the South Platte River Basin.



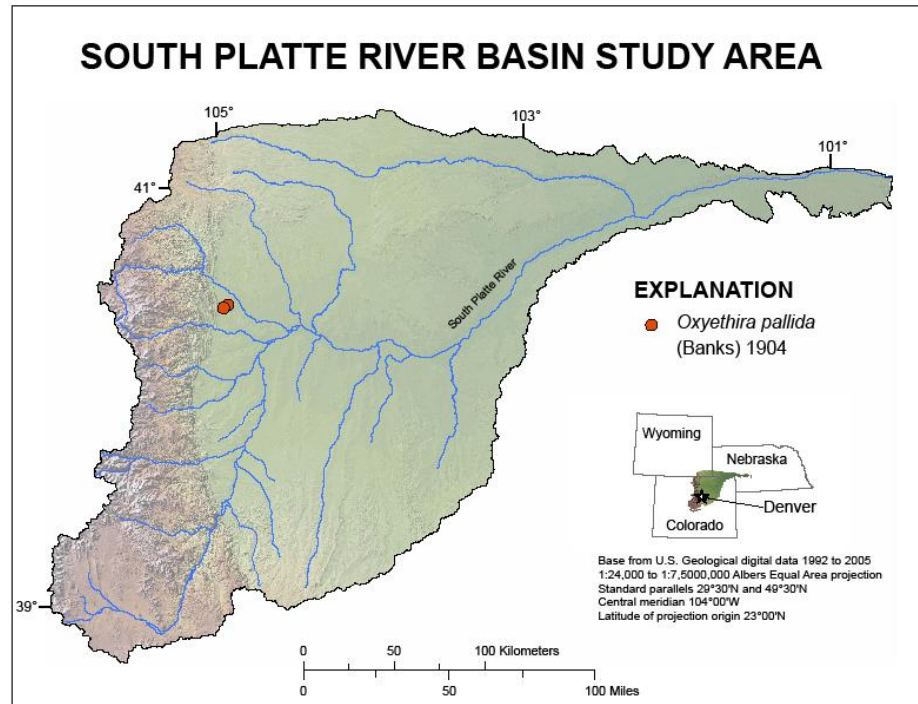
Distribution of *Orthotrichia aegerfasciella* collections in the South Platte River Basin.



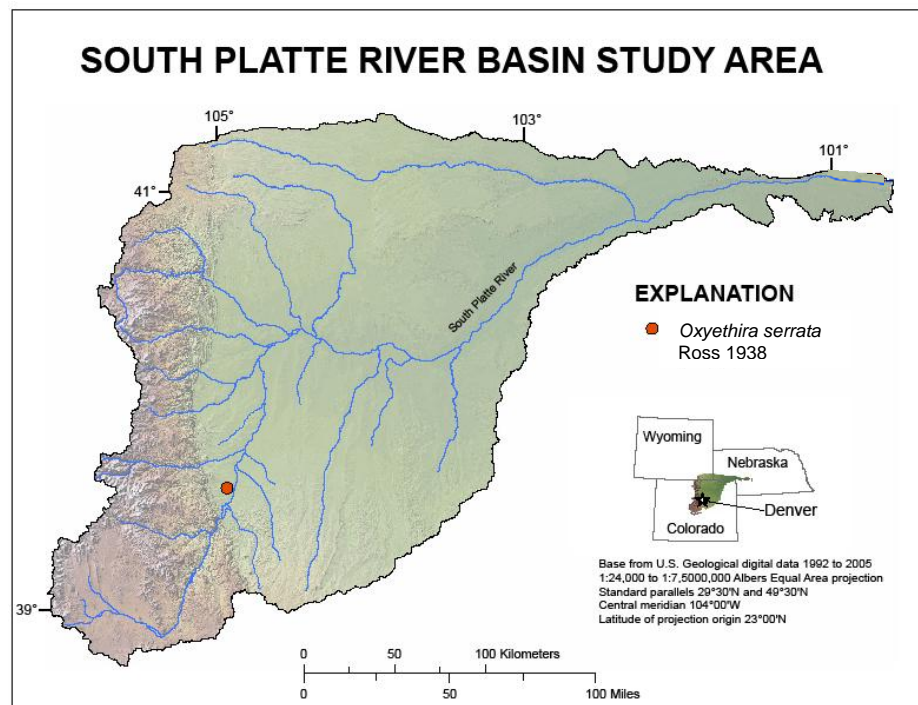
Distribution of *Orthotrichia cristata* collections in the South Platte River Basin.



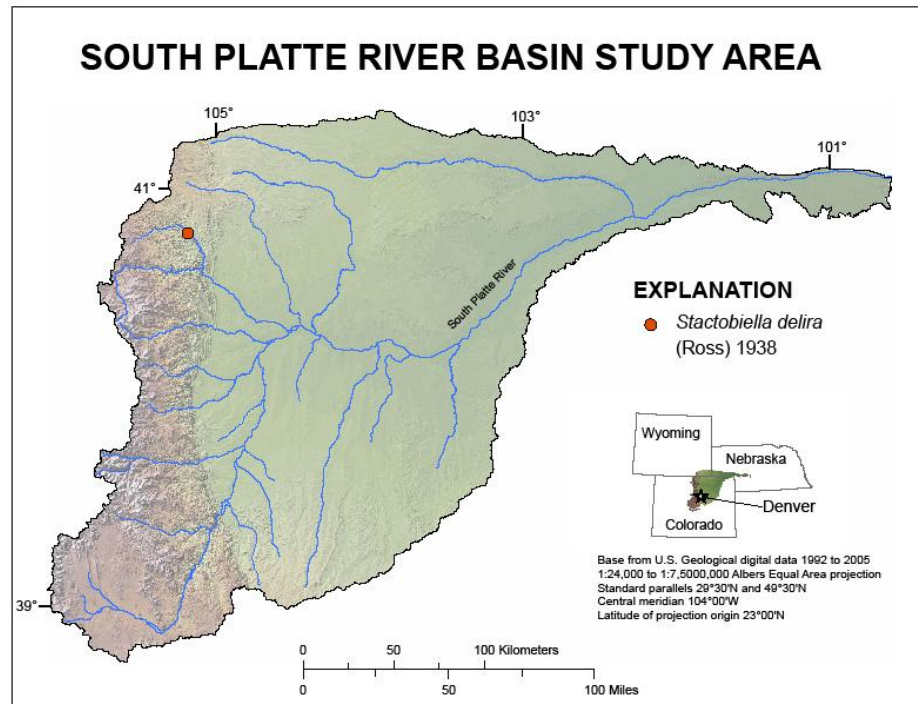
Distribution of *Oxyethira dualis* collections in the South Platte River Basin.



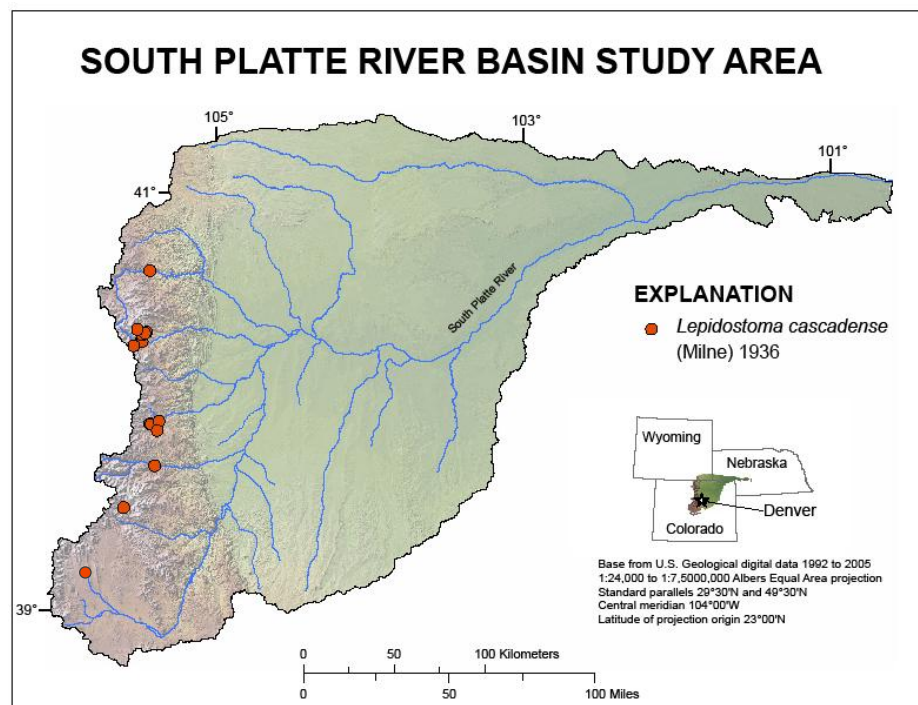
Distribution of *Oxyethira pallida* collections in the South Platte River Basin.



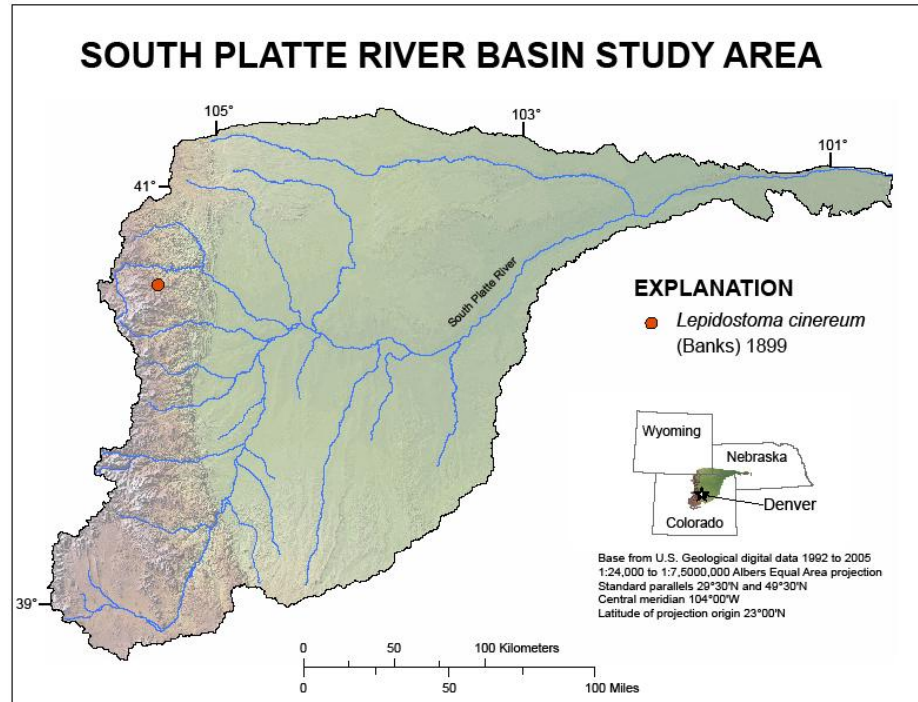
Distribution of *Oxyethira serrata* collections in the South Platte River Basin.



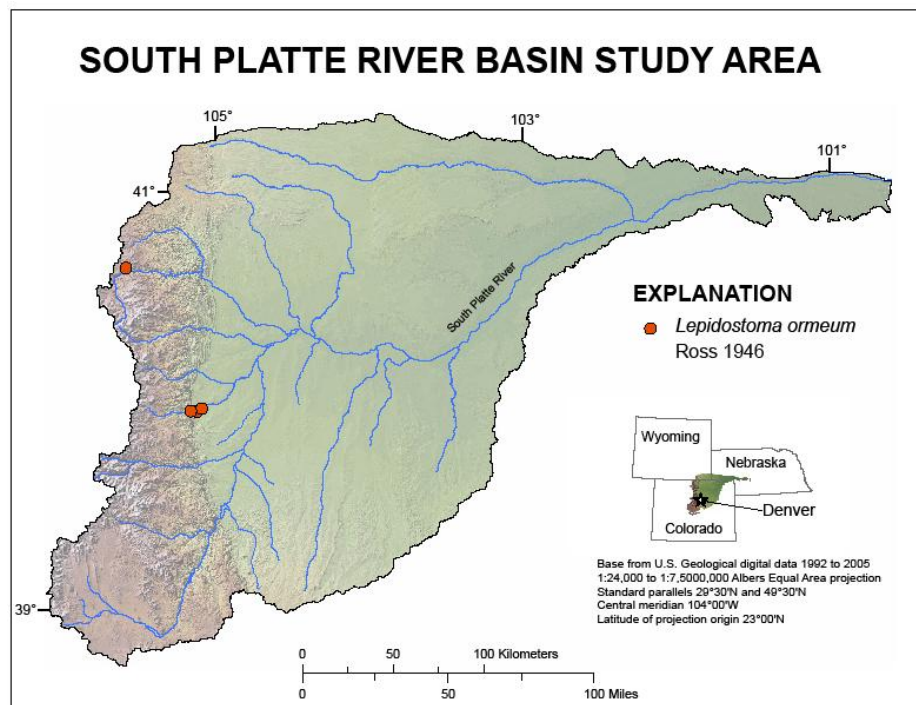
Distribution of *Stactobiella delira* collections in the South Platte River Basin.



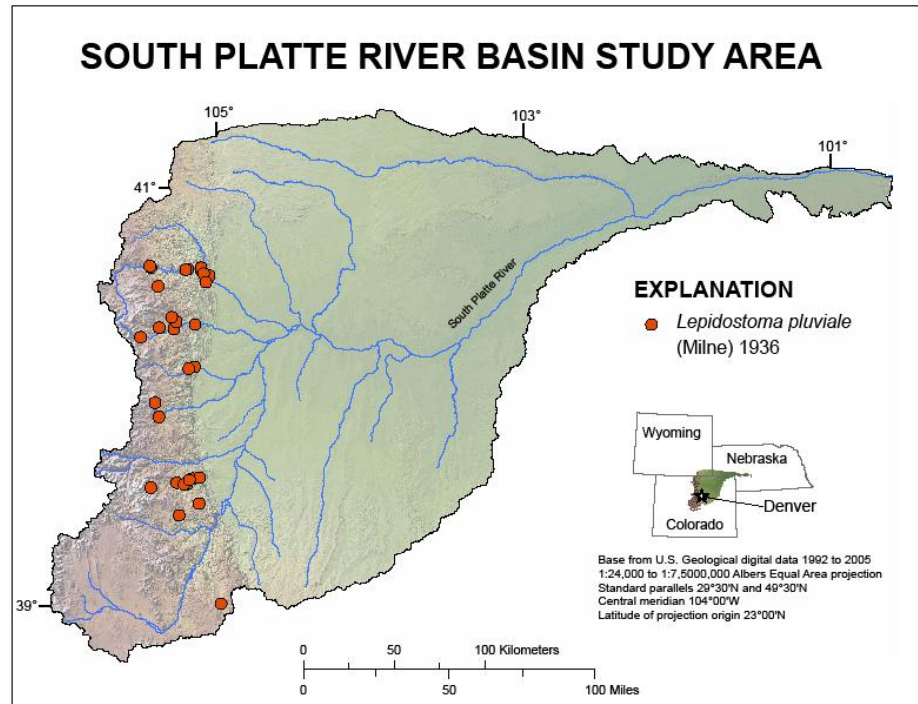
Distribution of *Lepidostoma cascadenae* collections in the South Platte River Basin.



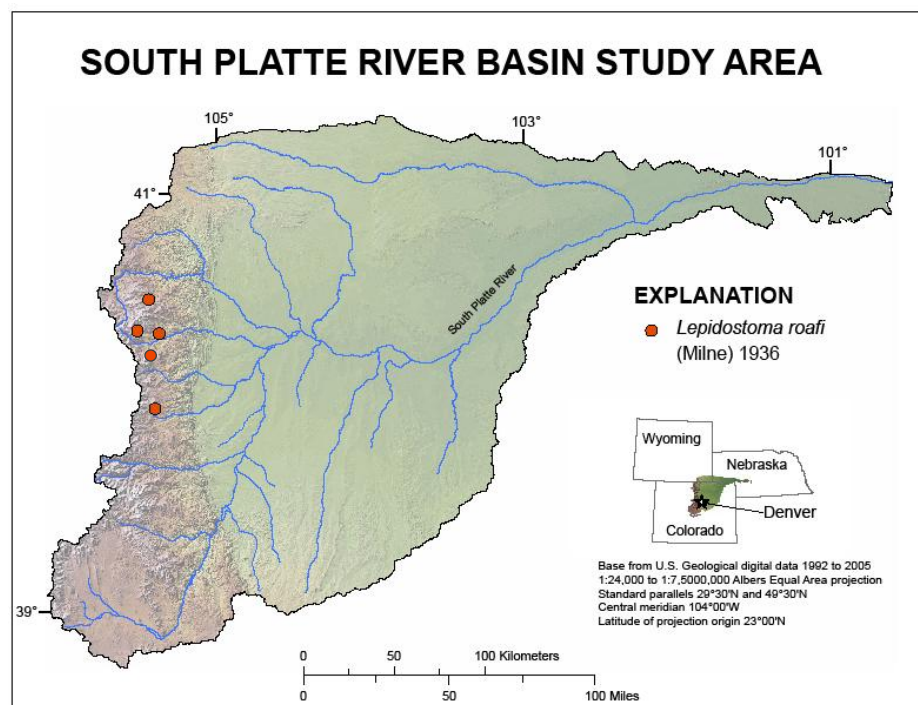
Distribution of *Lepidostoma cinereum* collections in the South Platte River Basin.



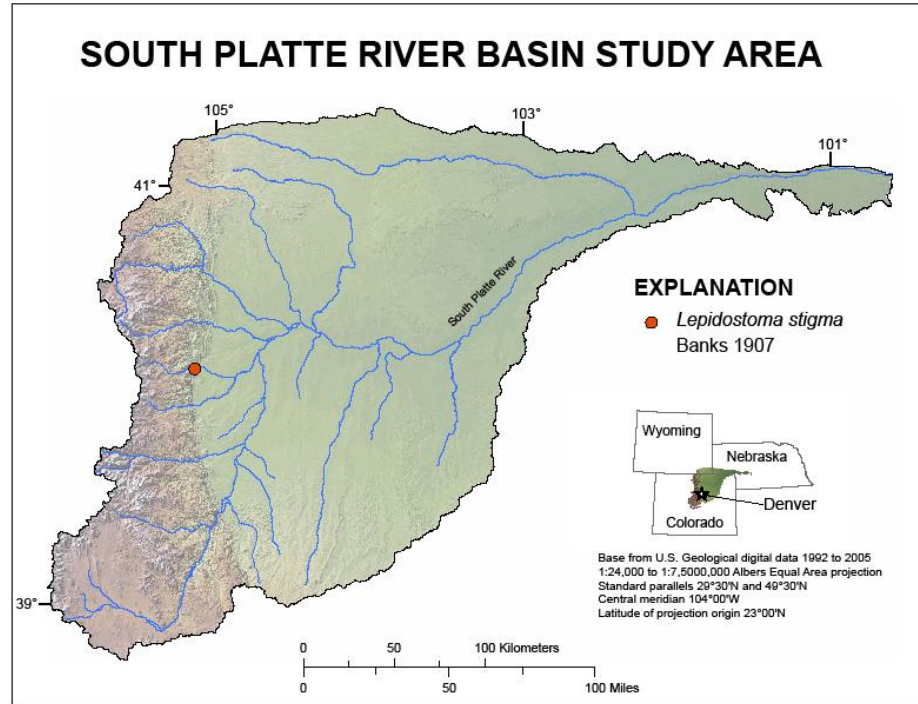
Distribution of *Lepidostoma ormeum* collections in the South Platte River Basin.



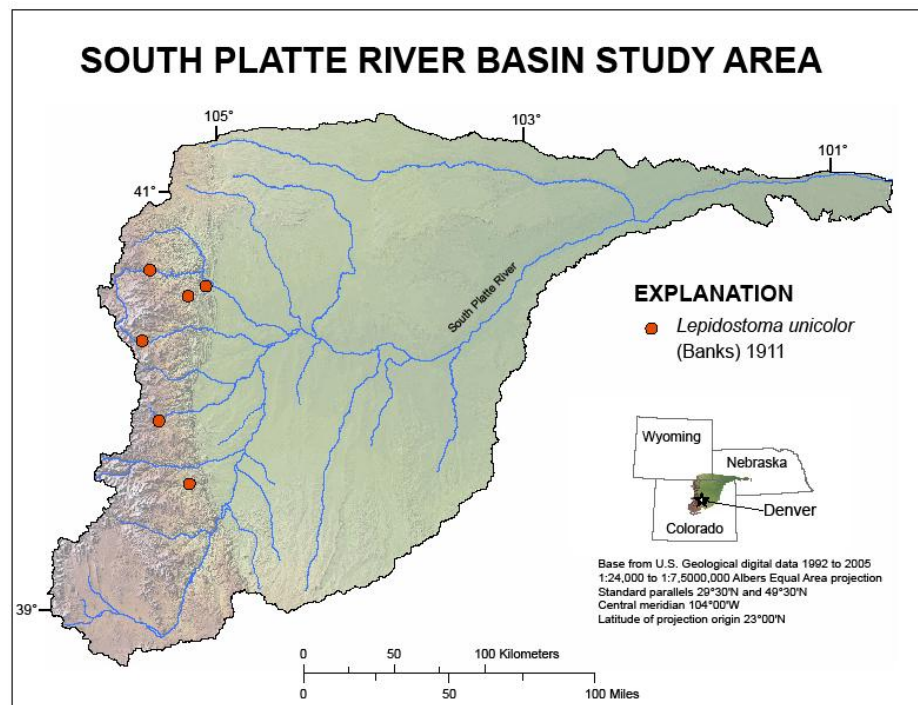
Distribution of *Lepidostoma pluviale* collections in the South Platte River Basin.



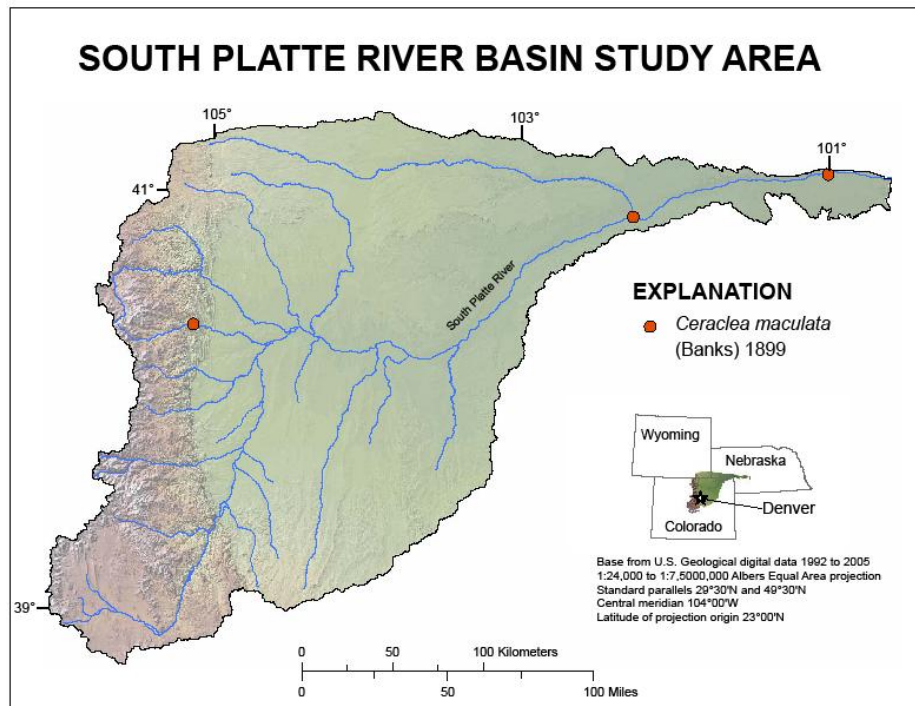
Distribution of *Lepidostoma roafi* collections in the South Platte River Basin.



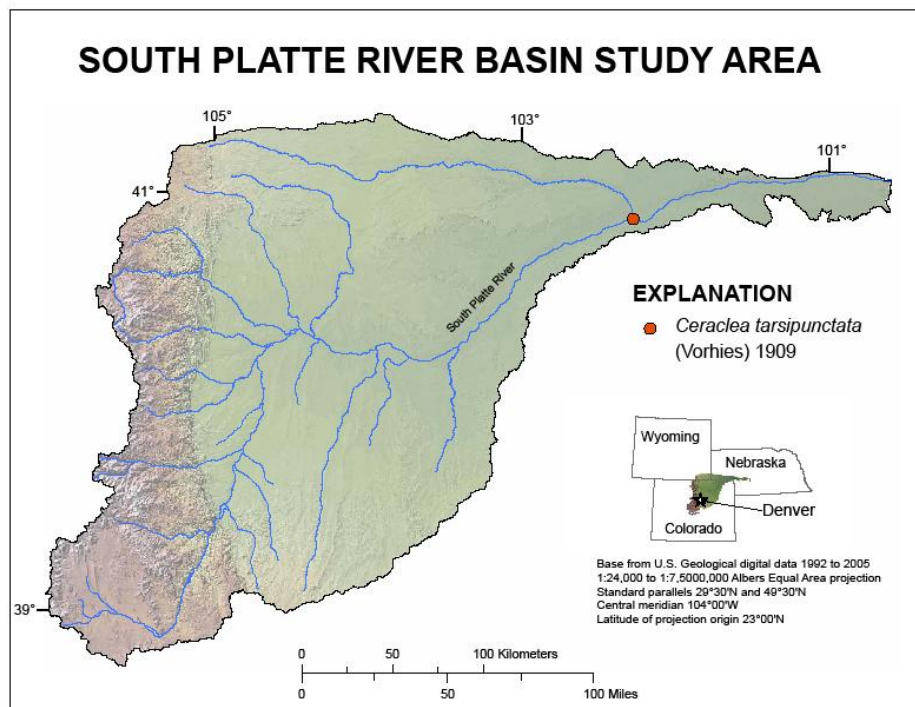
Distribution of *Lepidostoma stigma* collections in the South Platte River Basin.



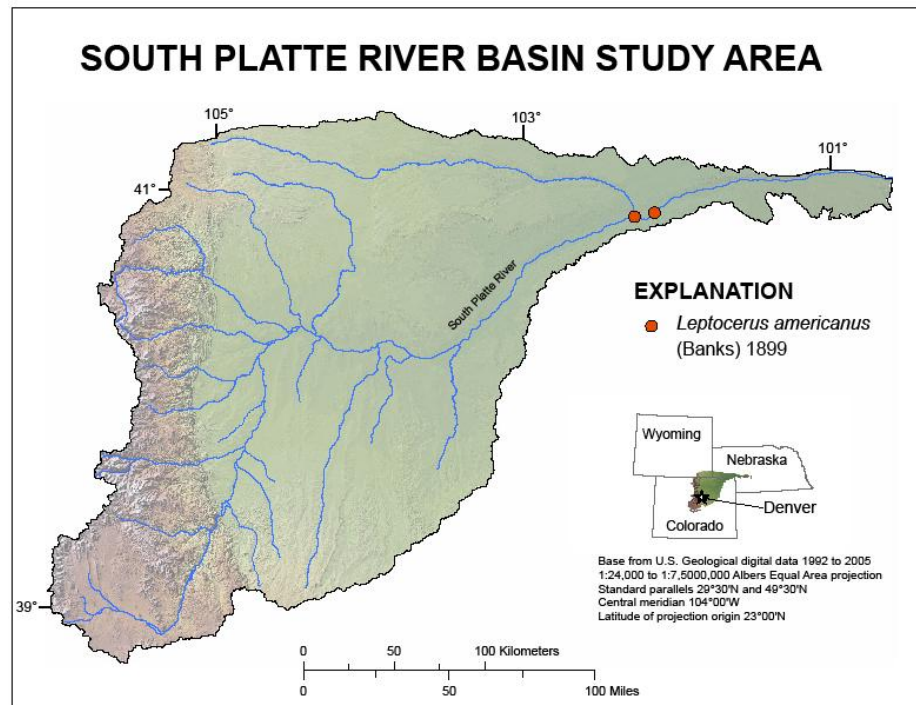
Distribution of *Lepidostoma unicolor* collections in the South Platte River Basin.



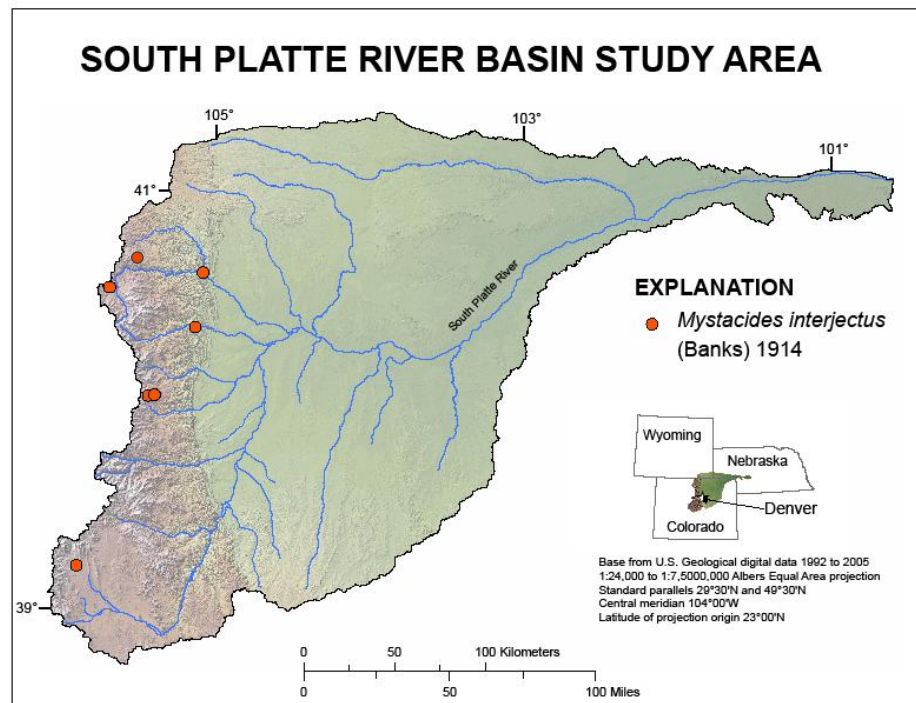
Distribution of *Ceraclea maculata* collections in the South Platte River Basin.



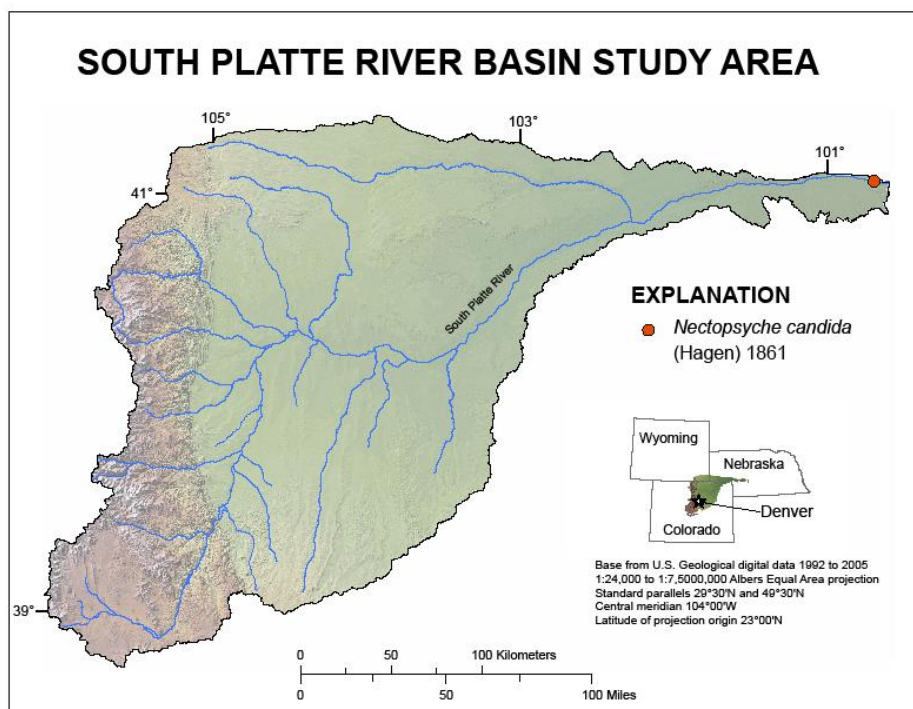
Distribution of *Ceraclea tarsipunctata* collections in the South Platte River Basin.



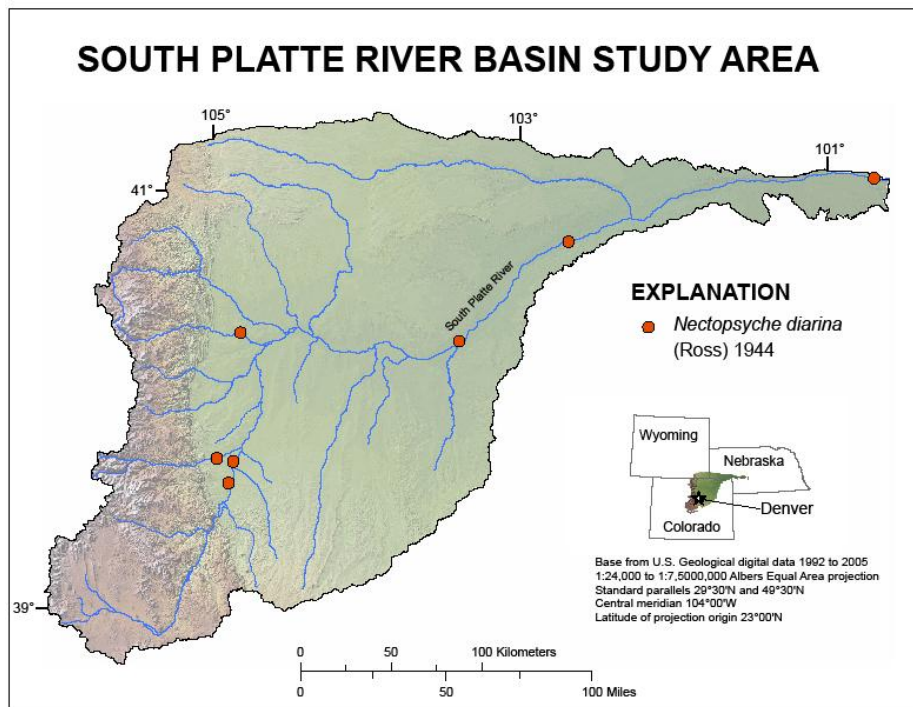
Distribution of *Leptocerus americanus* collections in the South Platte River Basin.



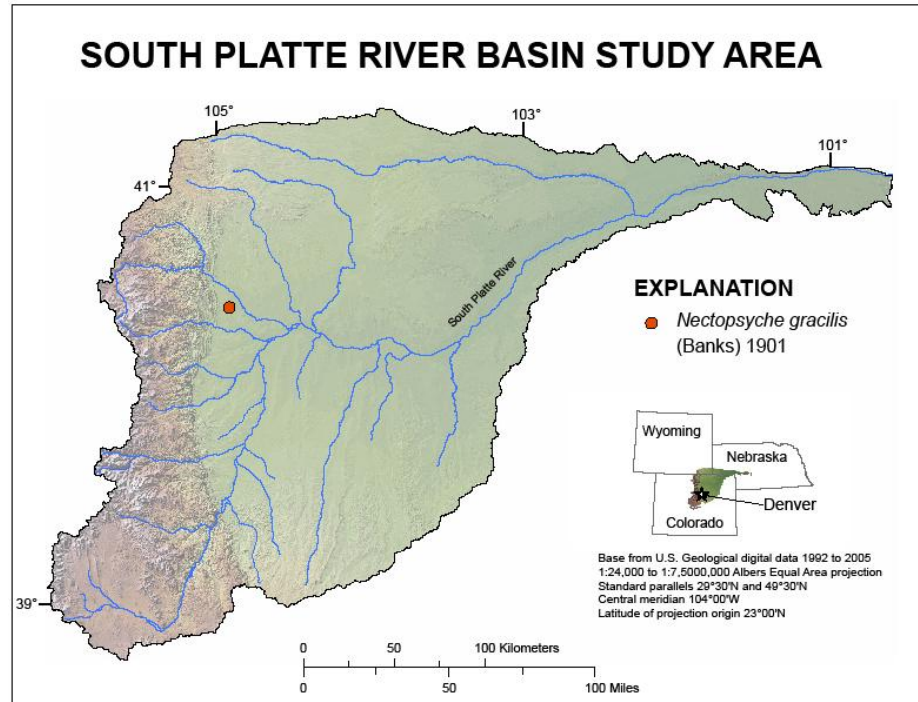
Distribution of *Mystacides interjectus* collections in the South Platte River Basin.



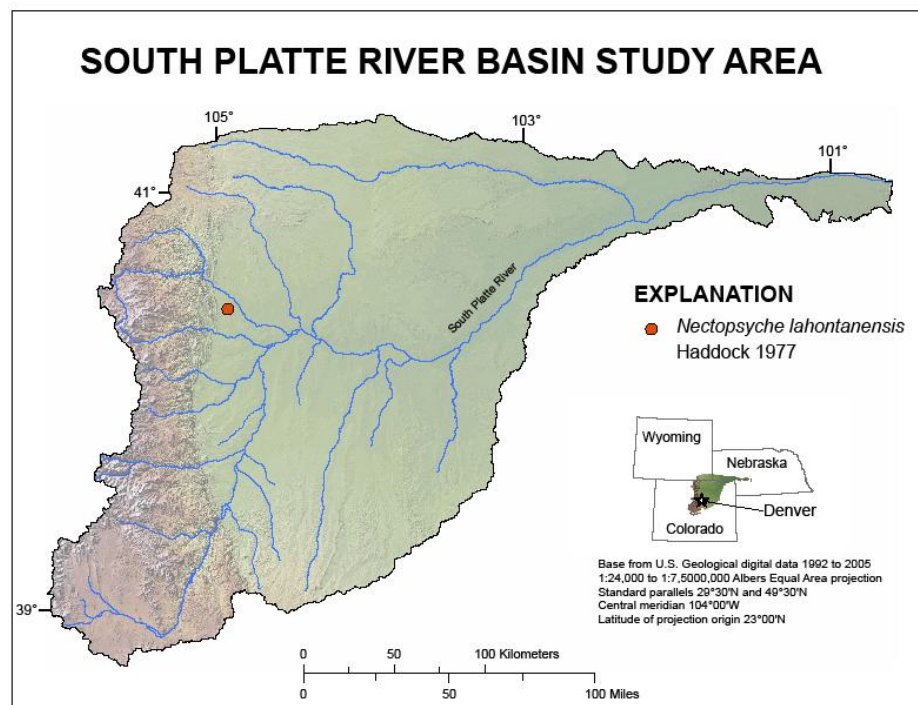
Distribution of *Nectopsyche candida* collections in the South Platte River Basin.



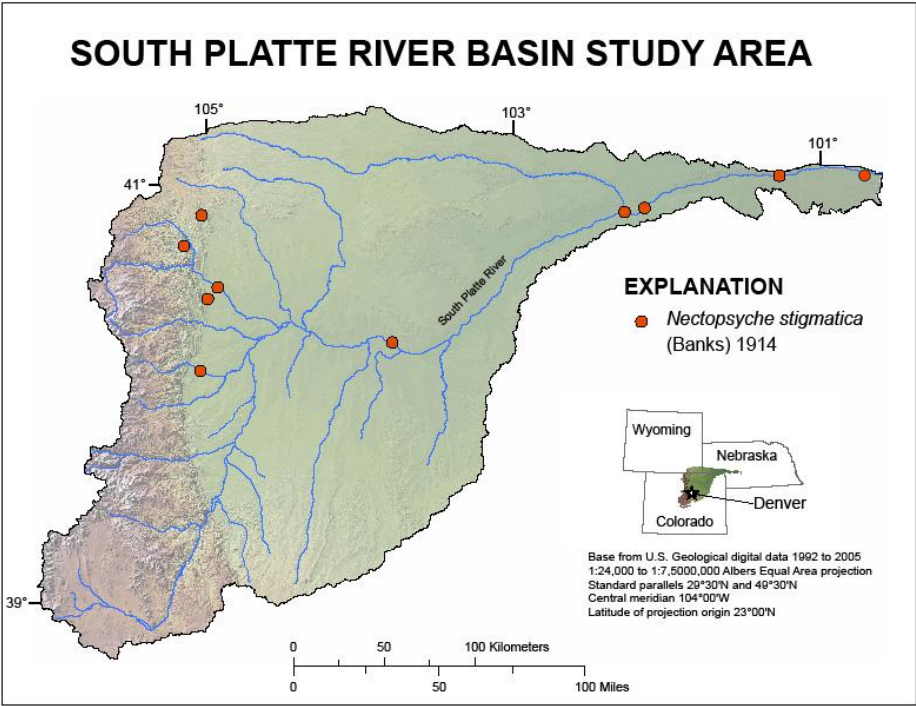
Distribution of *Nectopsyche diarina* collections in the South Platte River Basin.



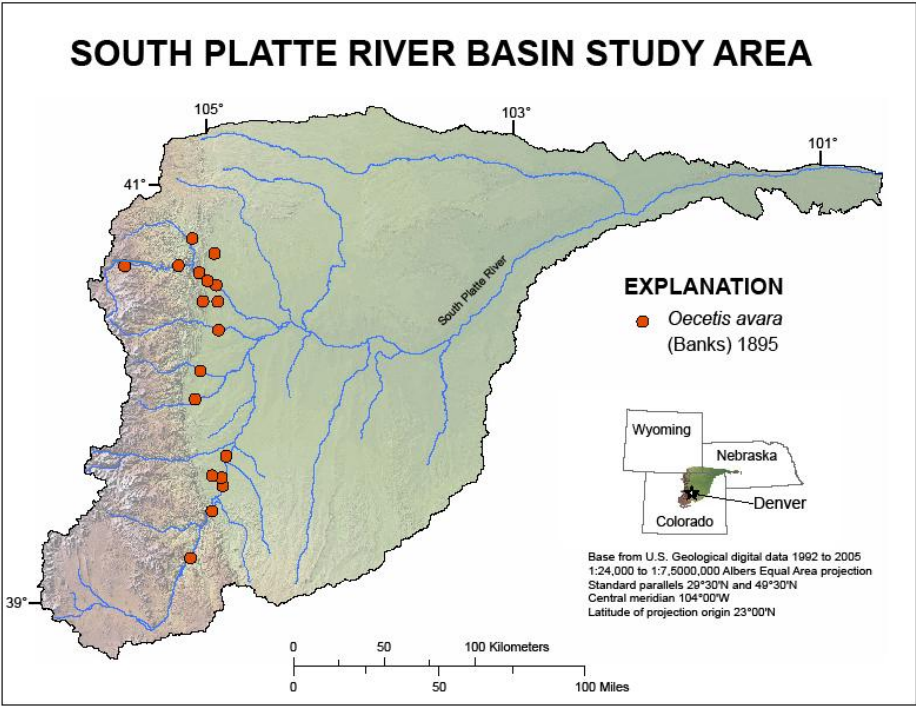
Distribution of *Nectopsyche gracilis* collections in the South Platte River Basin.



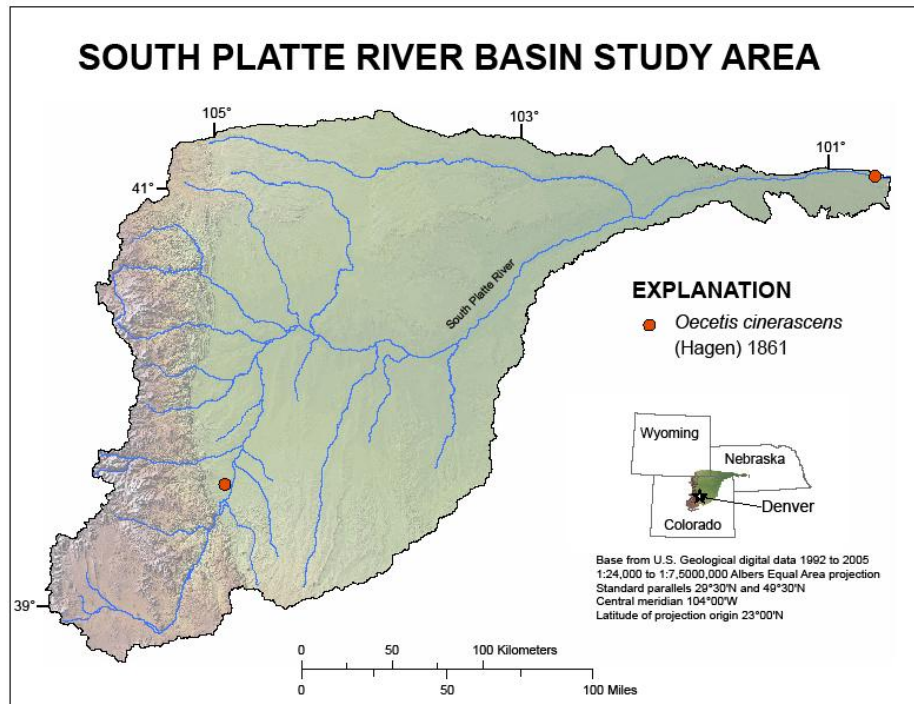
Distribution of *Nectopsyche lahontanensis* collections in the South Platte River Basin.



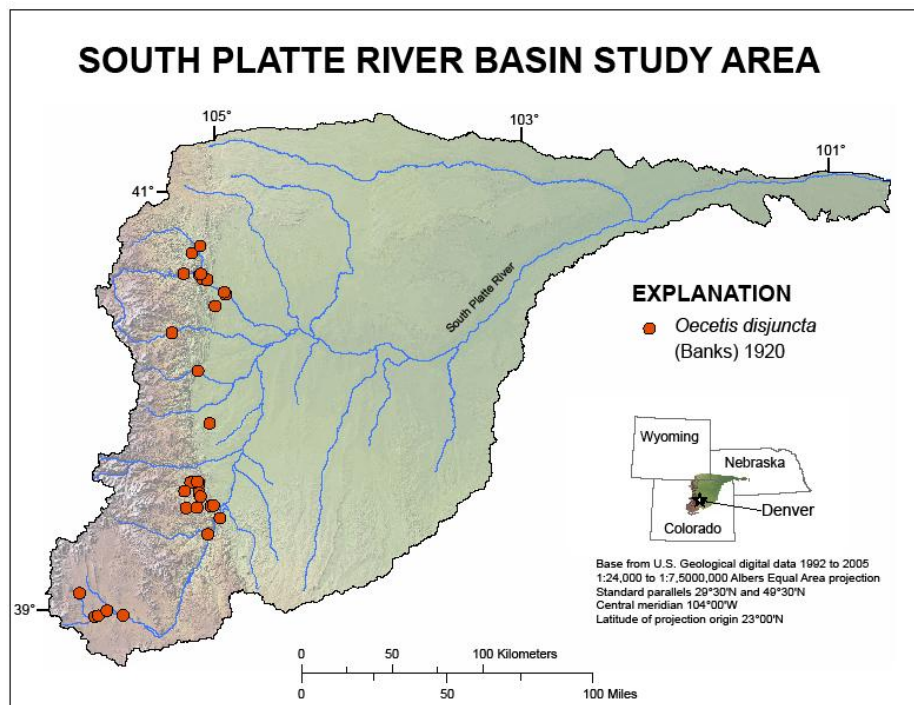
Distribution of *Nectopsyche stigmatica* collections in the South Platte River Basin.



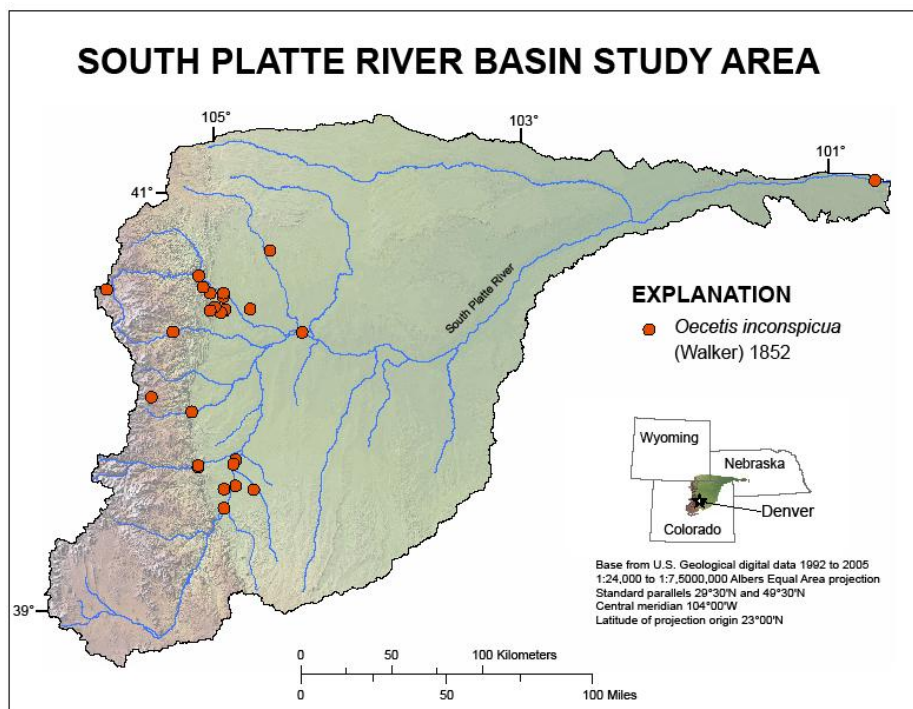
Distribution of *Oecetis avara* collections in the South Platte River Basin.



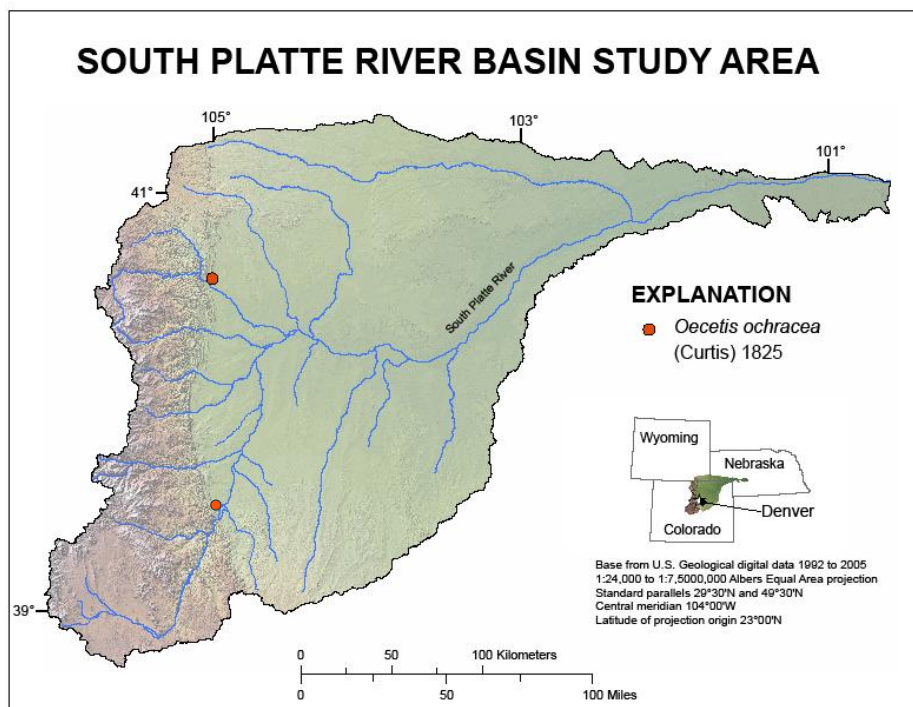
Distribution of *Oecetis cinerascens* collections in the South Platte River Basin.



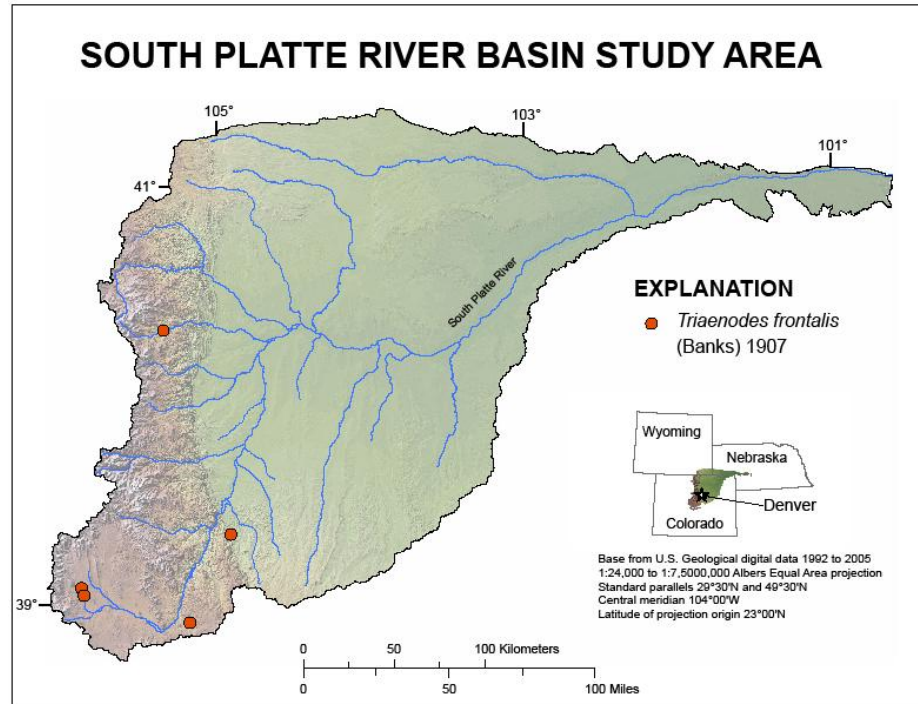
Distribution of *Oecetis disjuncta* collections in the South Platte River Basin.



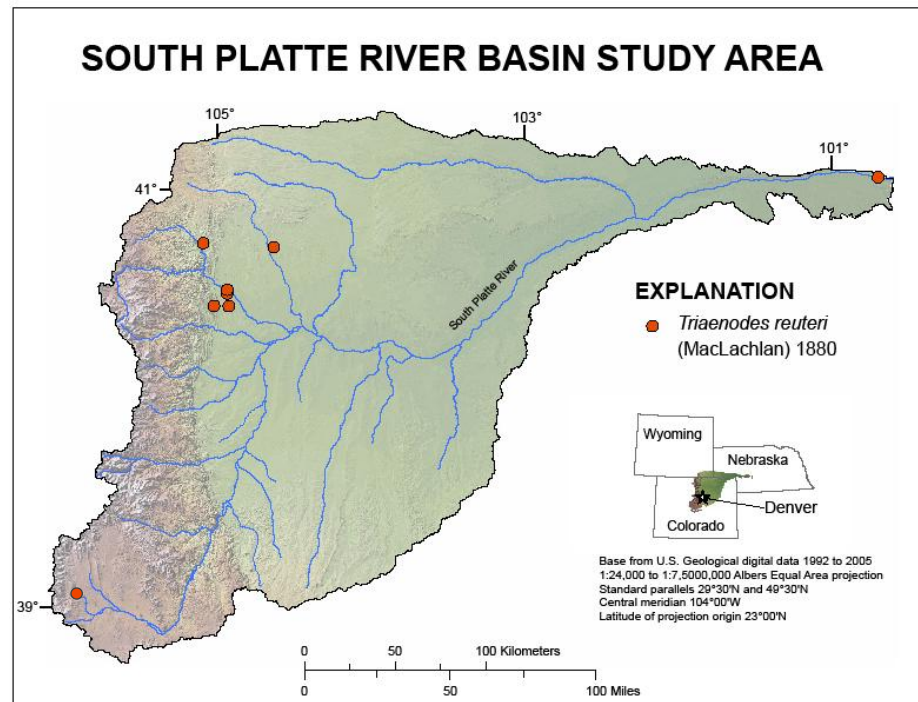
Distribution of *Oecetis inconspicua* collections in the South Platte River Basin.



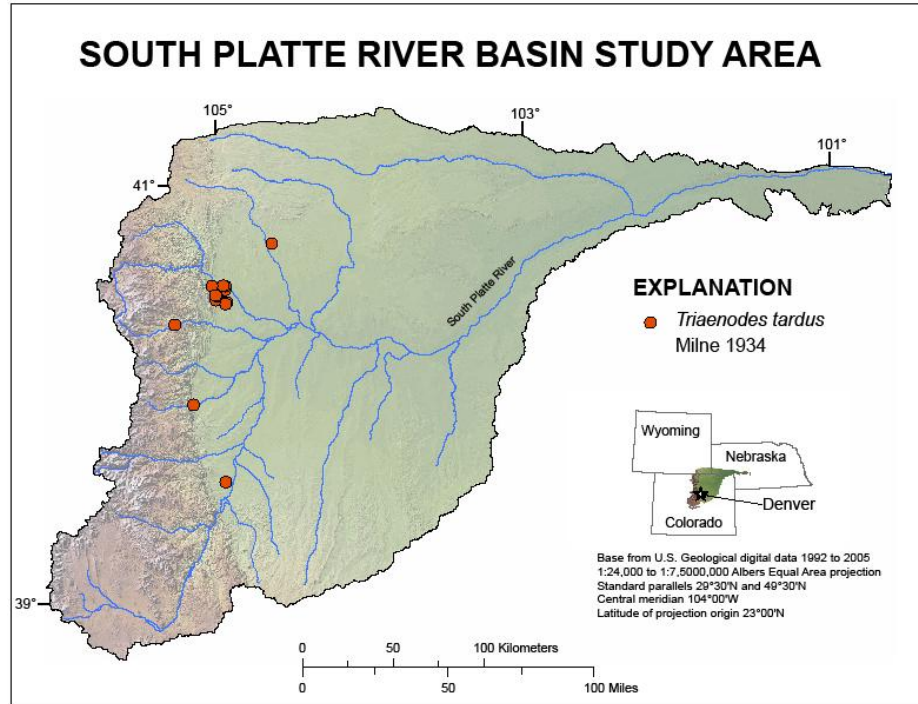
Distribution of *Oecetis ochracea* collections in the South Platte River Basin.



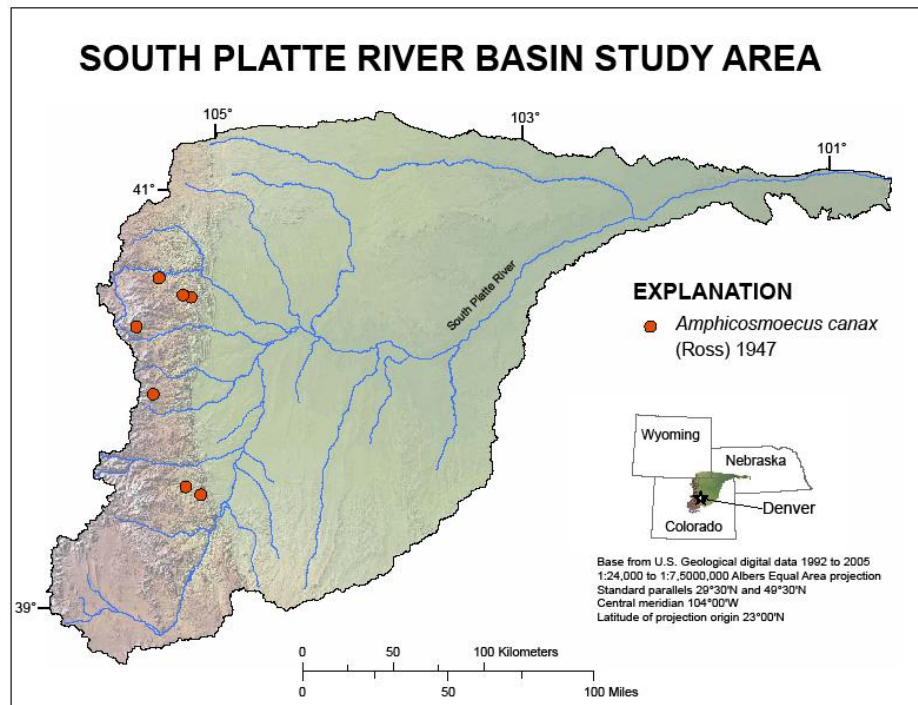
Distribution of *Triaenodes frontalis* collections in the South Platte River Basin.



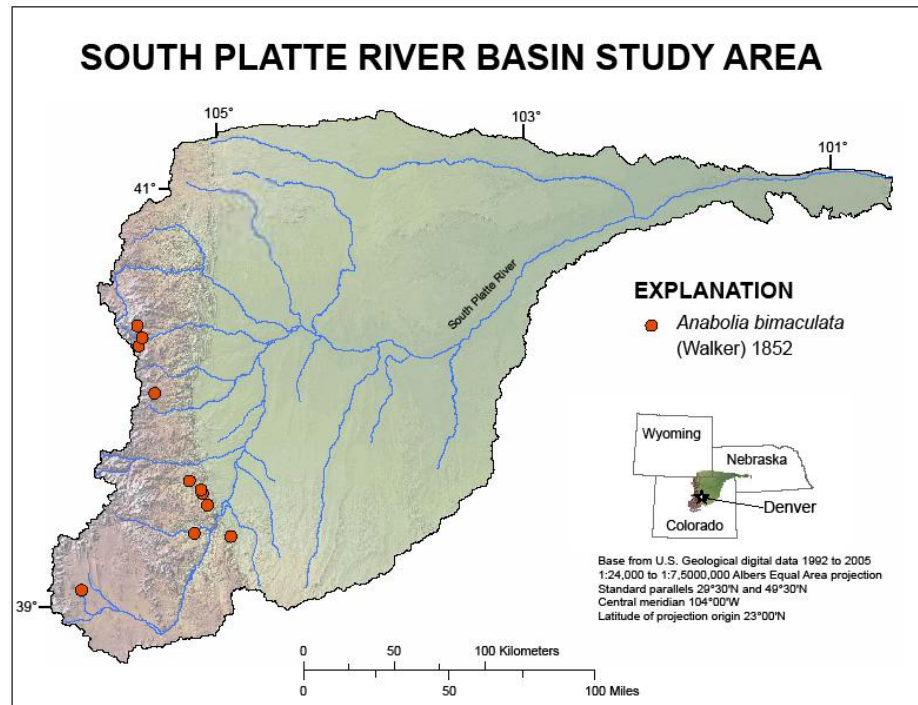
Distribution of *Triaenodes reuteri* collections in the South Platte River Basin.



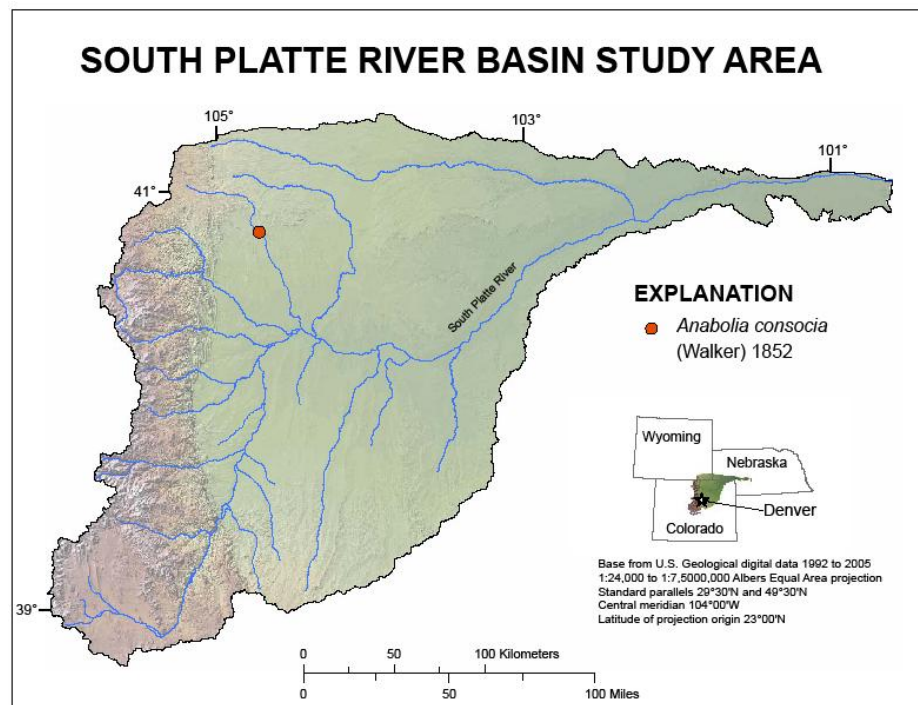
Distribution of *Triaenodes tardus* collections in the South Platte River Basin.



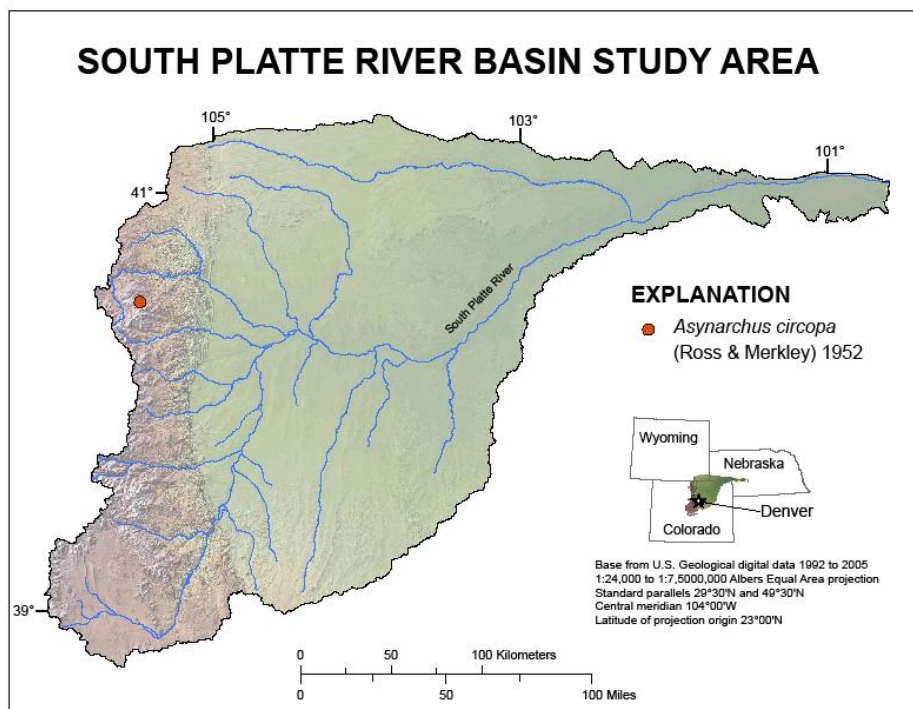
Distribution of *Amphicosmoecus canax* collections in the South Platte River Basin.



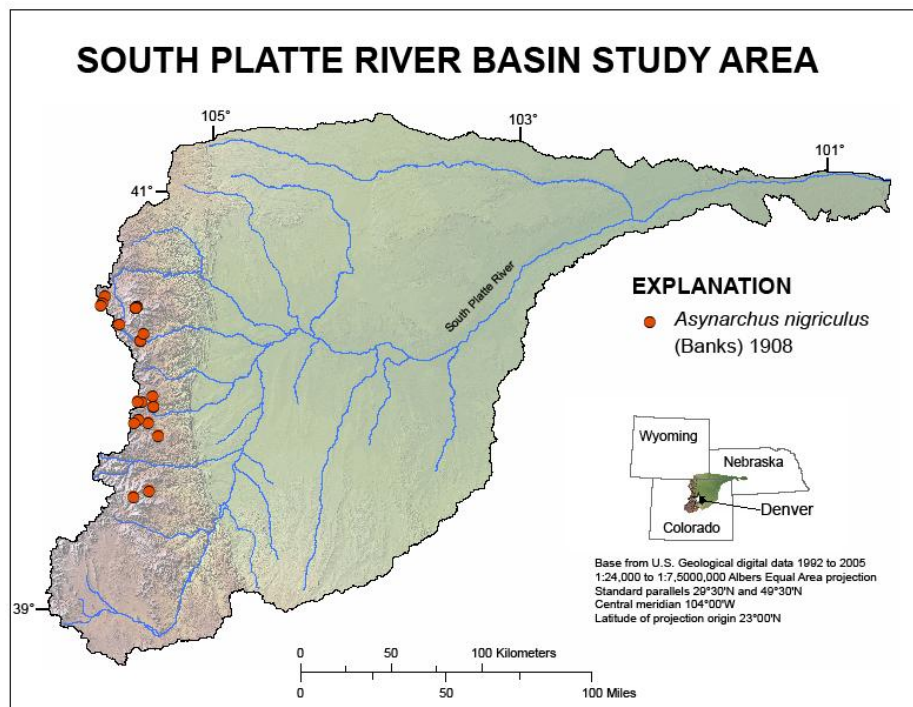
Distribution of *Anabolia bimaculata* collections in the South Platte River Basin.



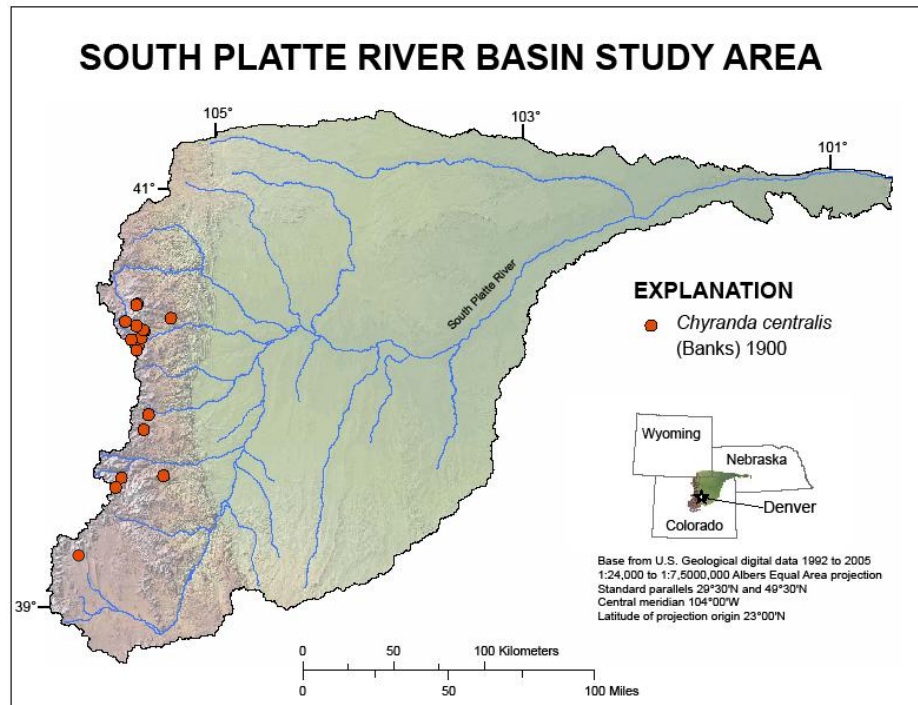
Distribution of *Anabolia consocia* collections in the South Platte River Basin.



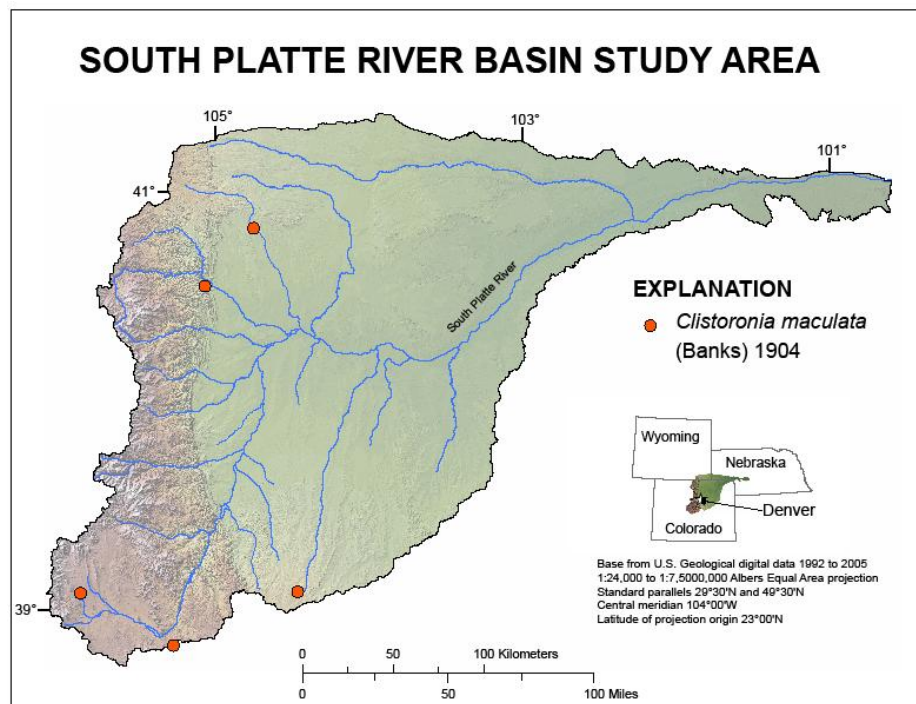
Distribution of *Asynarchus circopa* collections in the South Platte River Basin.



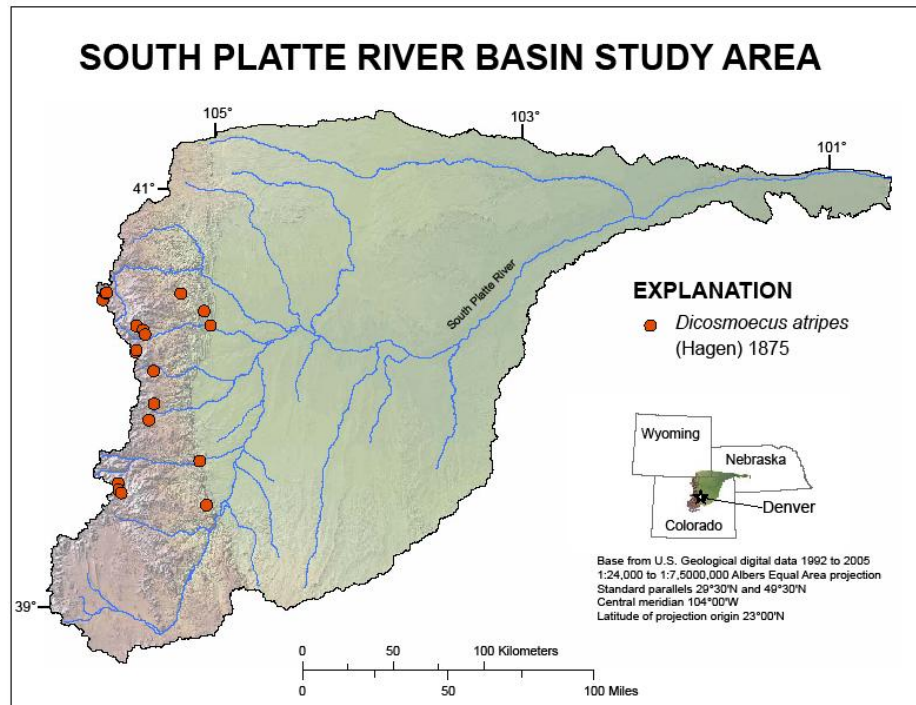
Distribution of *Asynarchus nigriculus* collections in the South Platte River Basin.



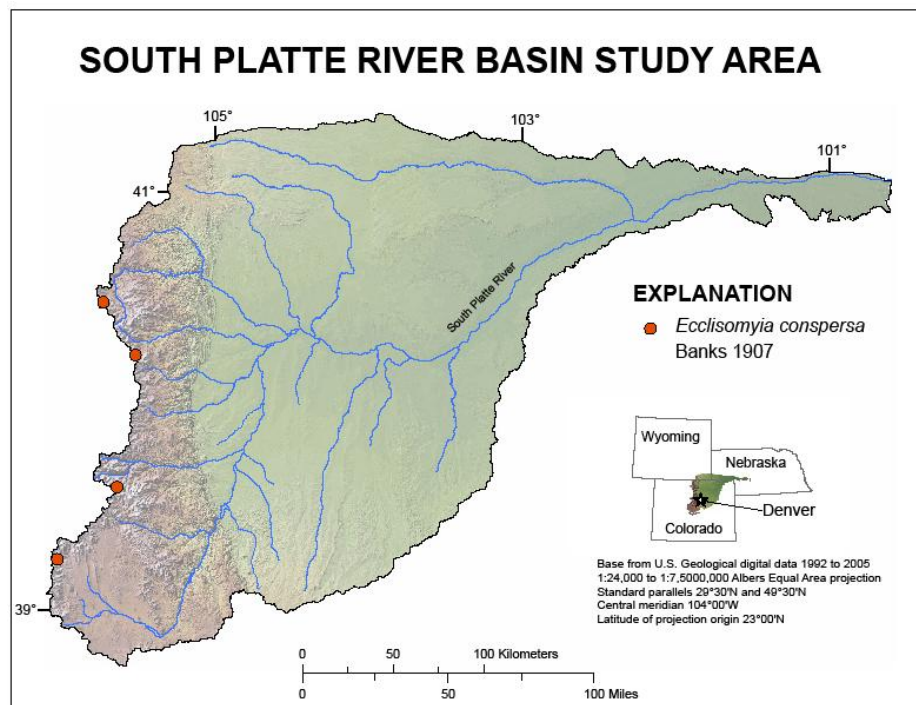
Distribution of *Chyranda centralis* collections in the South Platte River Basin.



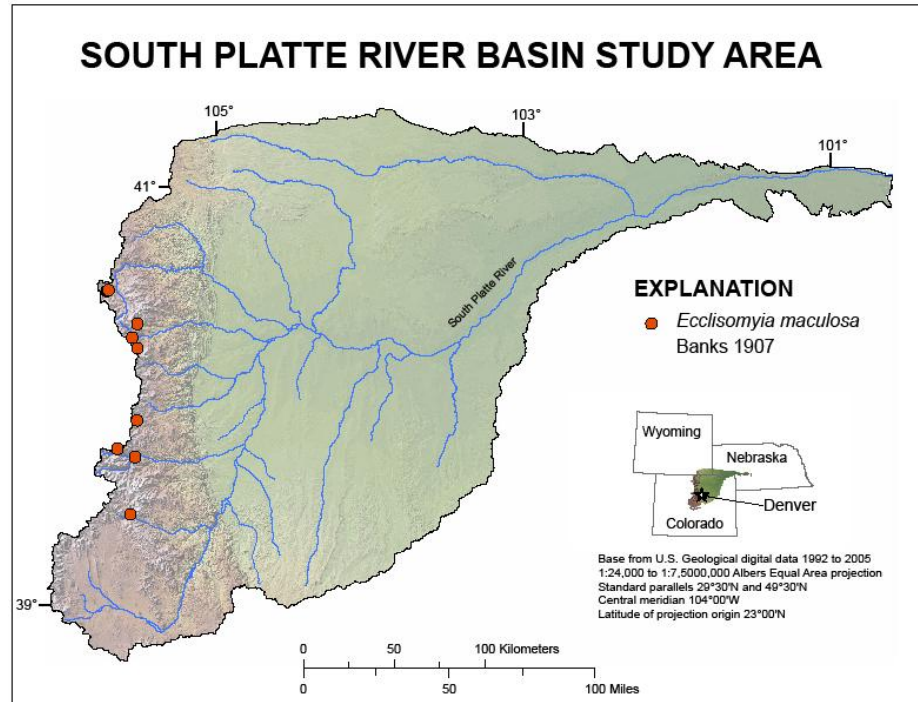
Distribution of *Clistoronia maculata* collections in the South Platte River Basin.



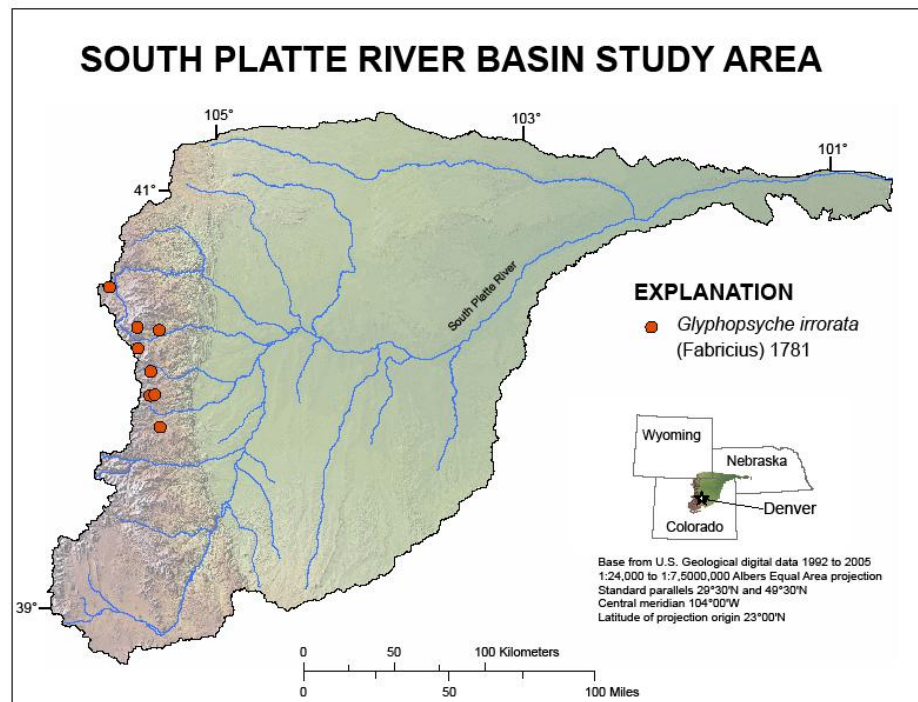
Distribution of *Dicosmoecus atripes* collections in the South Platte River Basin.



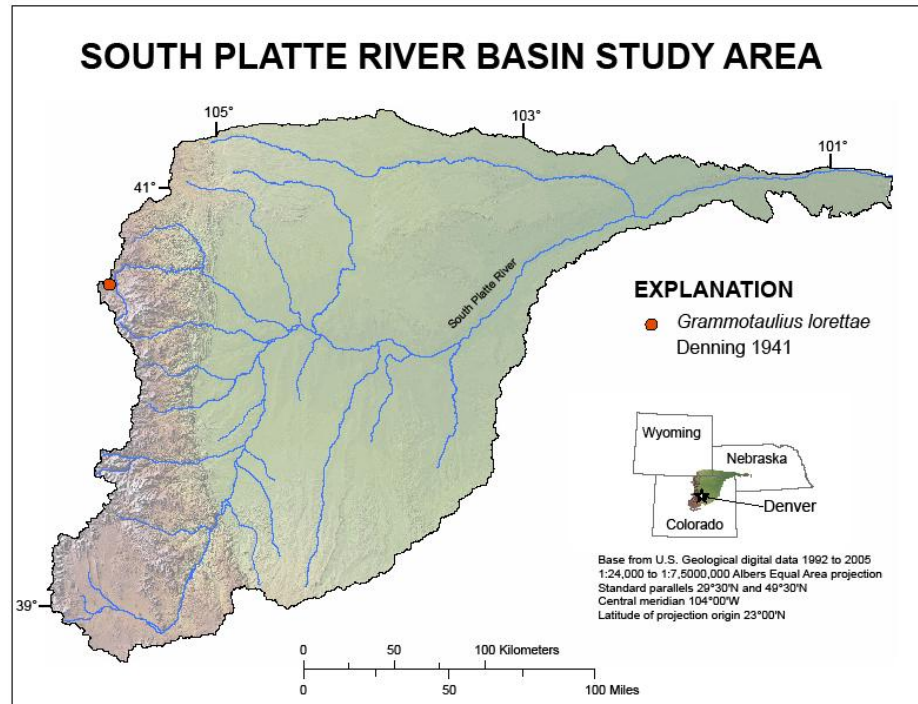
Distribution of *Ecclisomyia conspersa* collections in the South Platte River Basin.



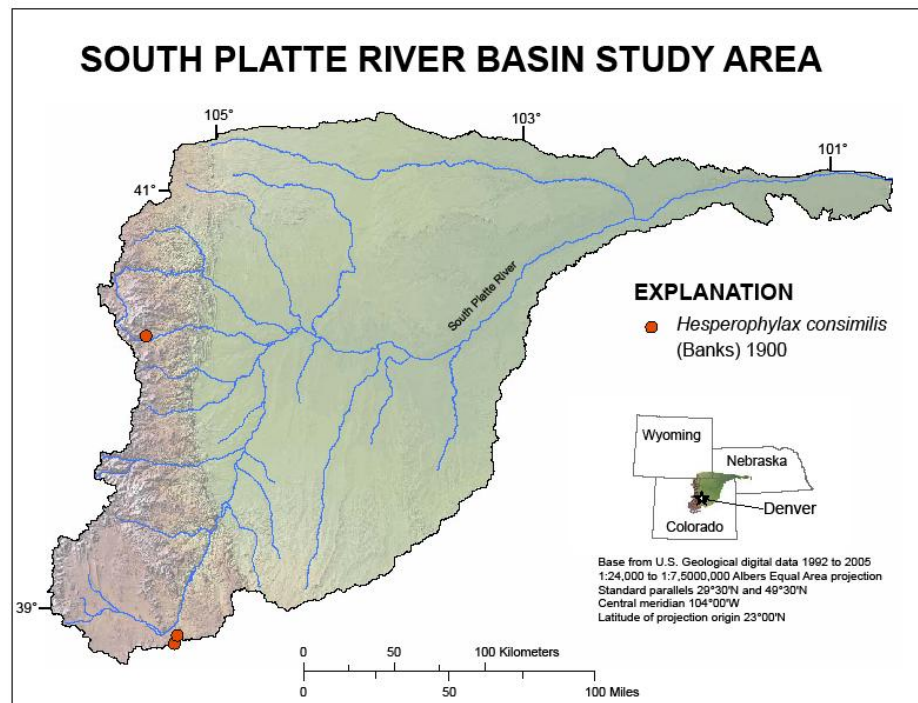
Distribution of *Ecclisomyia maculosa* collections in the South Platte River Basin.



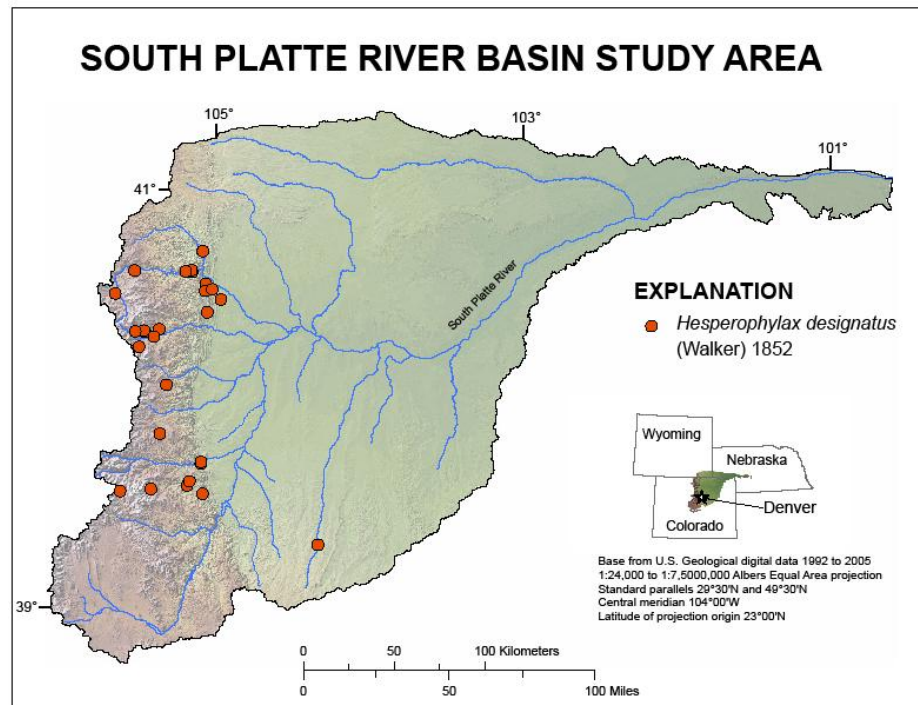
Distribution of *Glyphopsyche irrorata* collections in the South Platte River Basin.



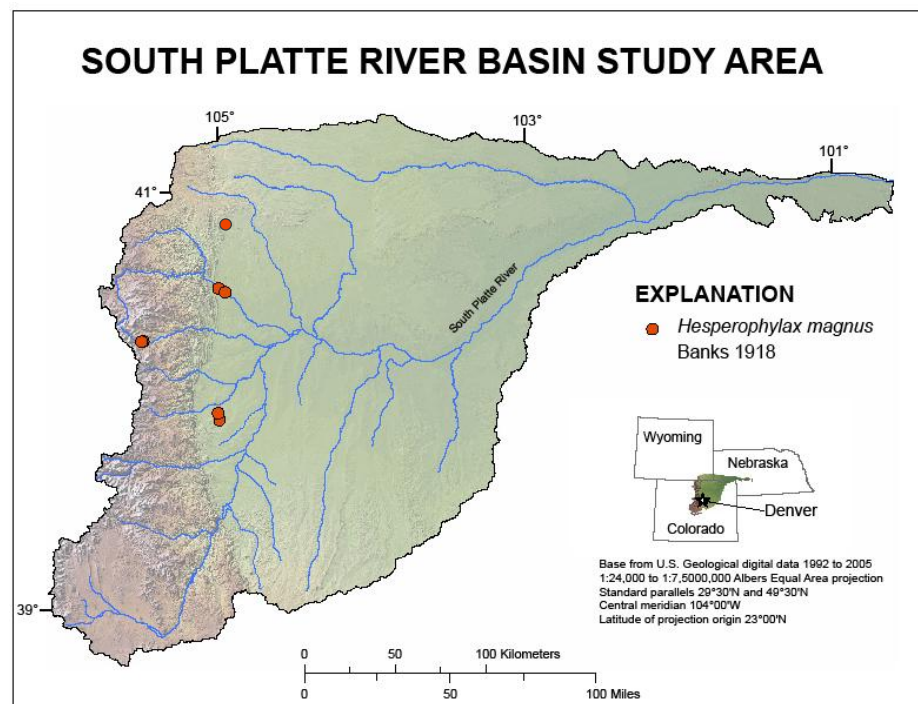
Distribution of *Grammotaulius lorettae* collections in the South Platte River Basin.



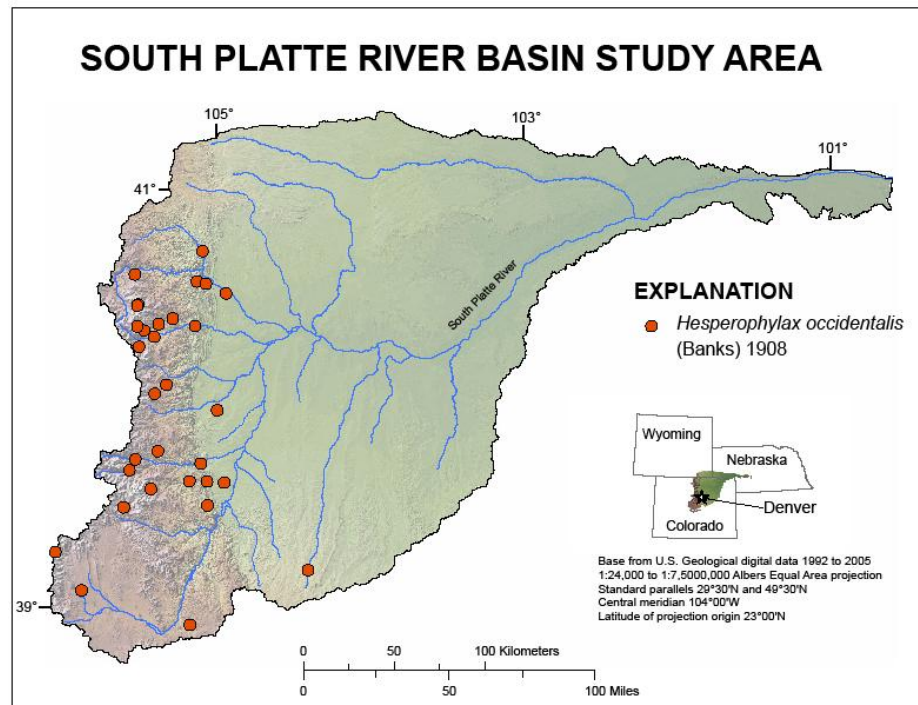
Distribution of *Hesperophylax consimilis* collections in the South Platte River Basin.



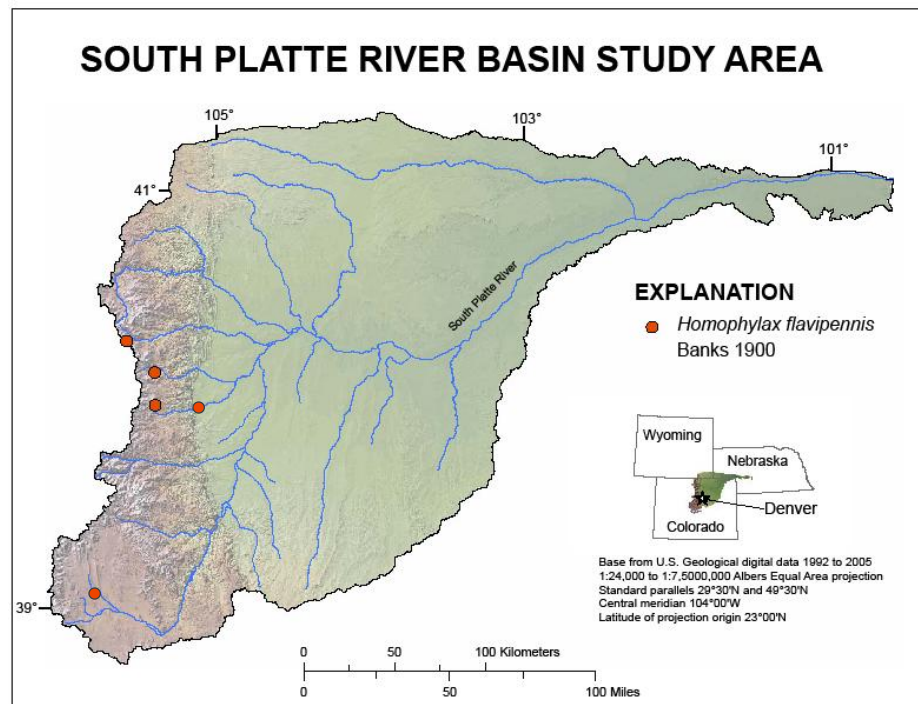
Distribution of *Hesperophylax designatus* collections in the South Platte River Basin.



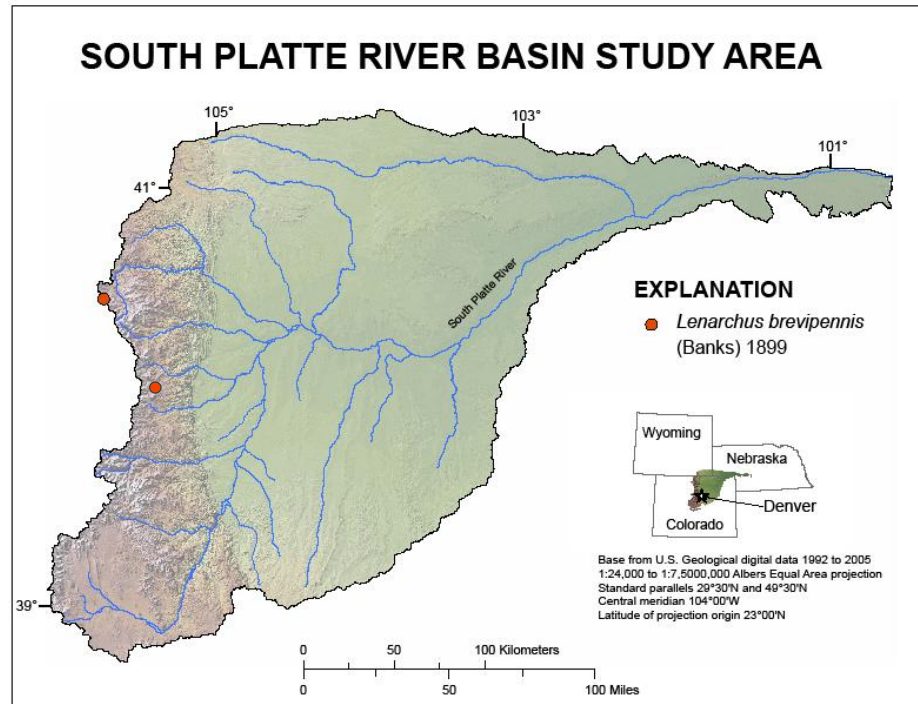
Distribution of *Hesperophylax magnus* collections in the South Platte River Basin.



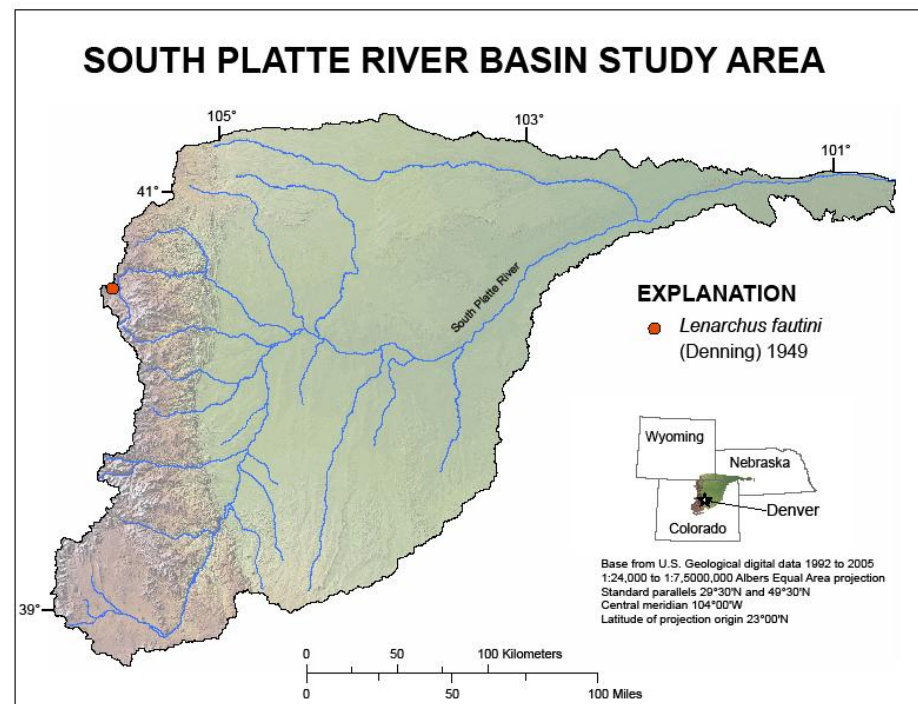
Distribution of *Hesperophylax occidentalis* collections in the South Platte River Basin.



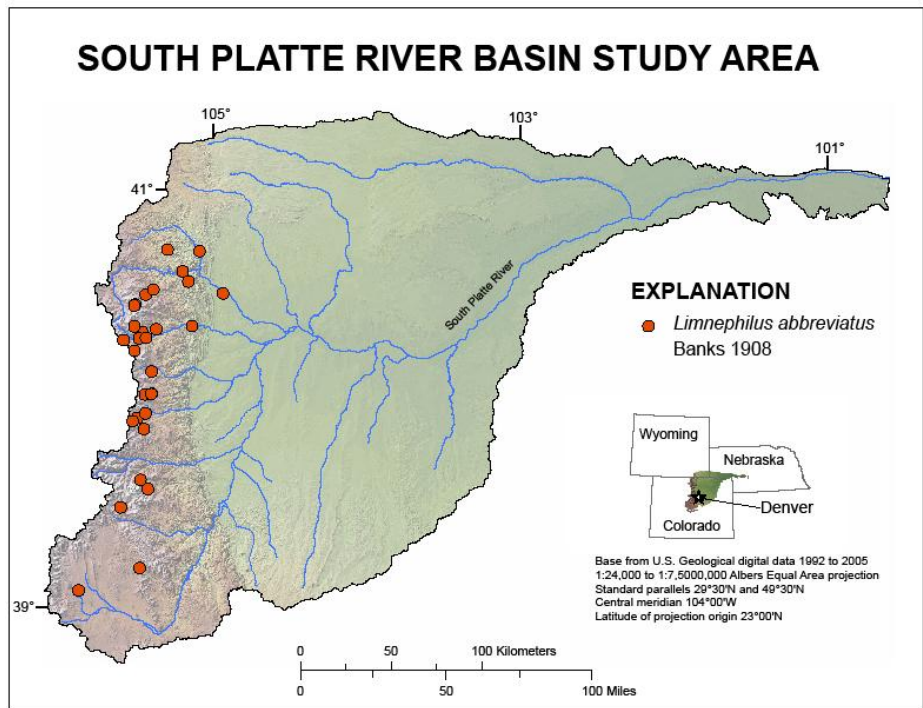
Distribution of *Homophylax flavipennis* collections in the South Platte River Basin.



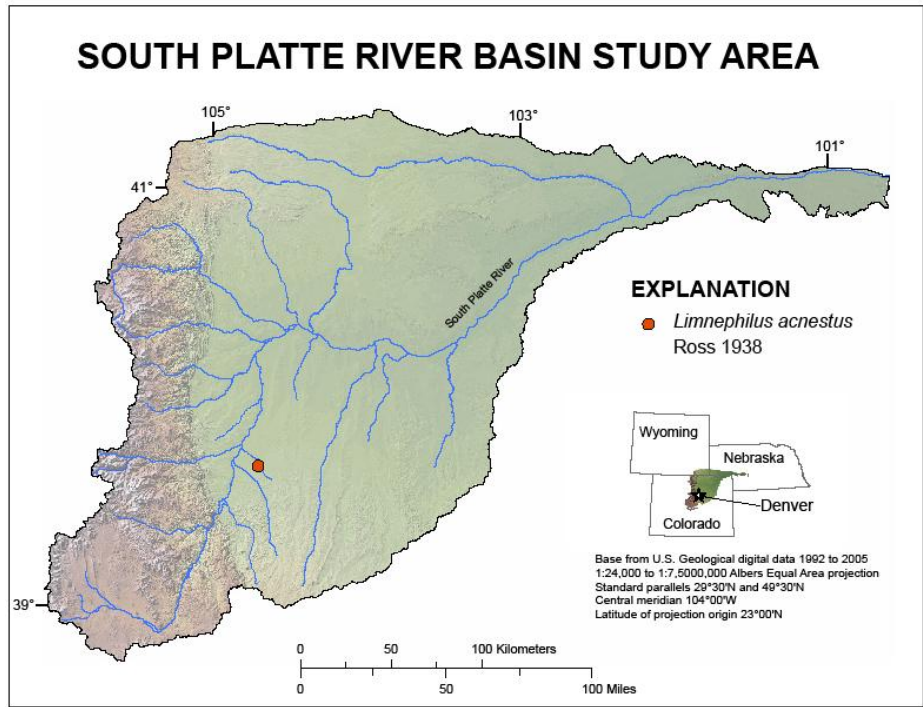
Distribution of *Lenarchus brevipennis* collections in the South Platte River Basin.



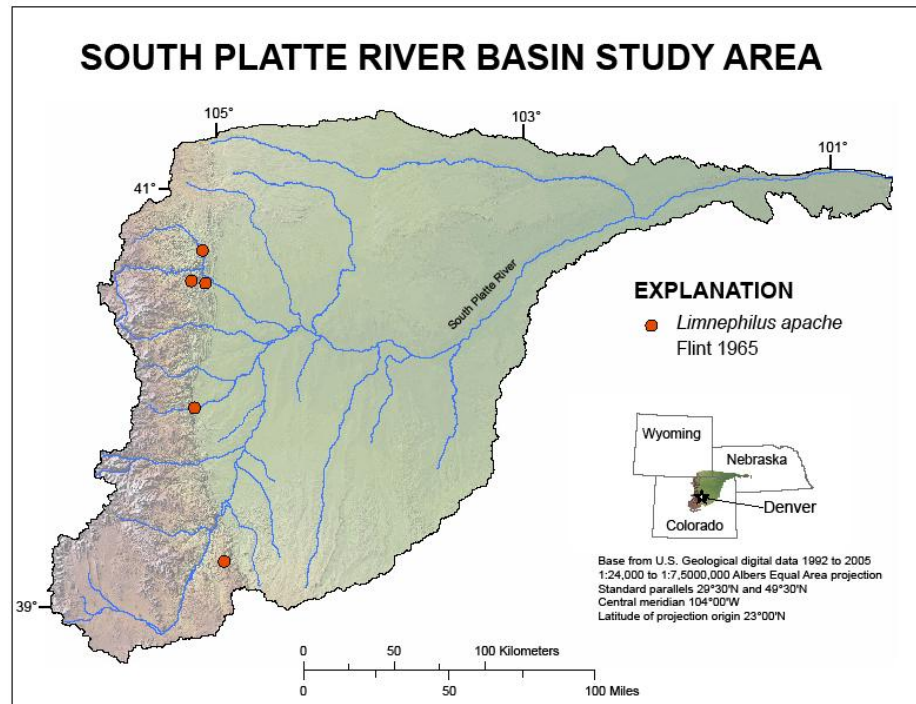
Distribution of *Lenarchus fautini* collections in the South Platte River Basin.



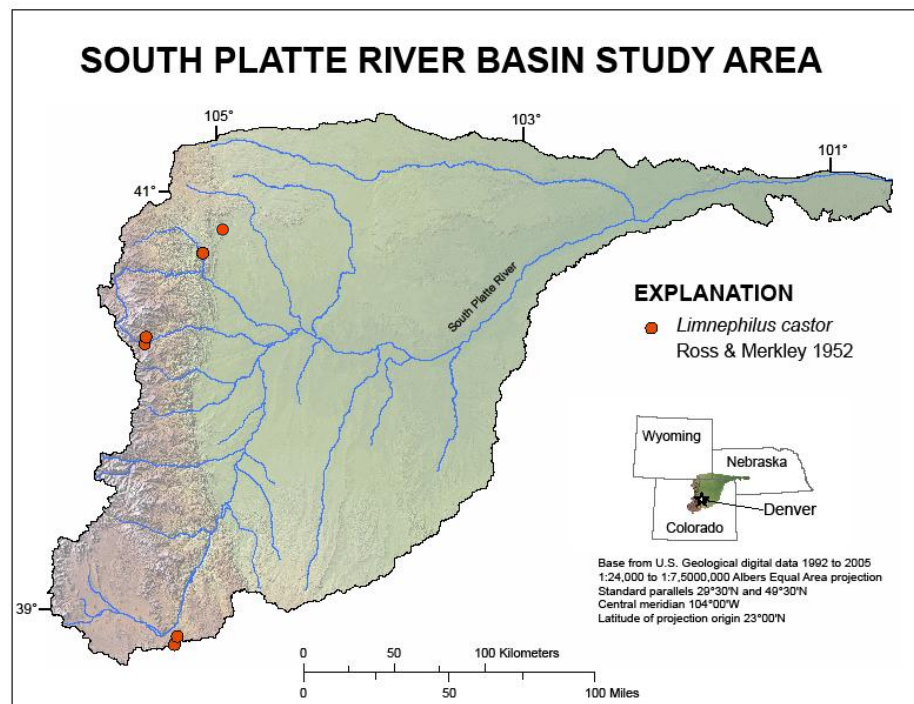
Distribution of *Limnephilus abbreviatus* collections in the South Platte River Basin.



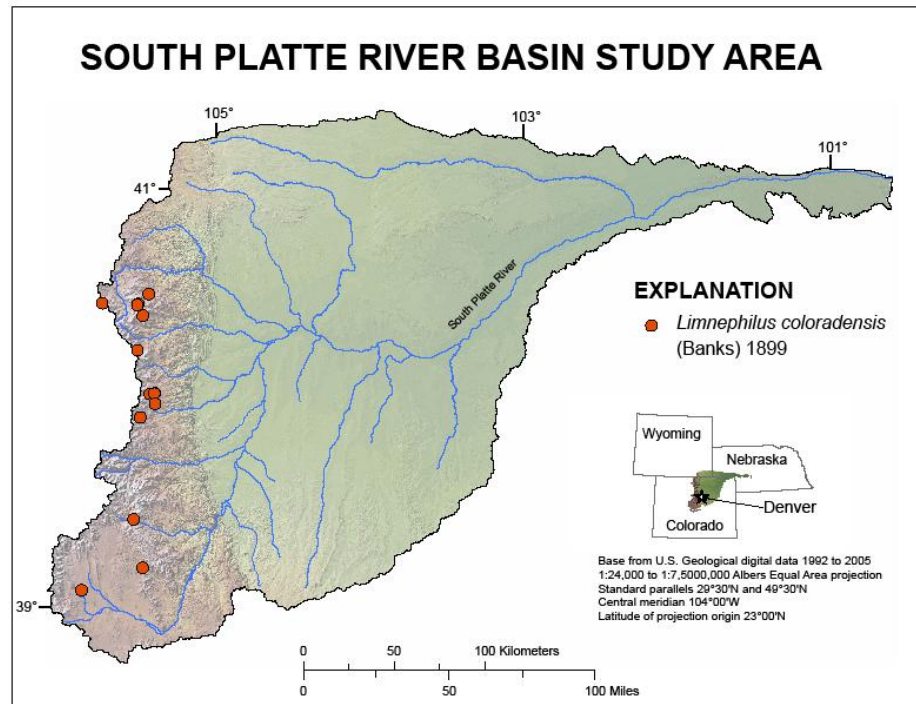
Distribution of *Limnephilus acnestus* collections in the South Platte River Basin.



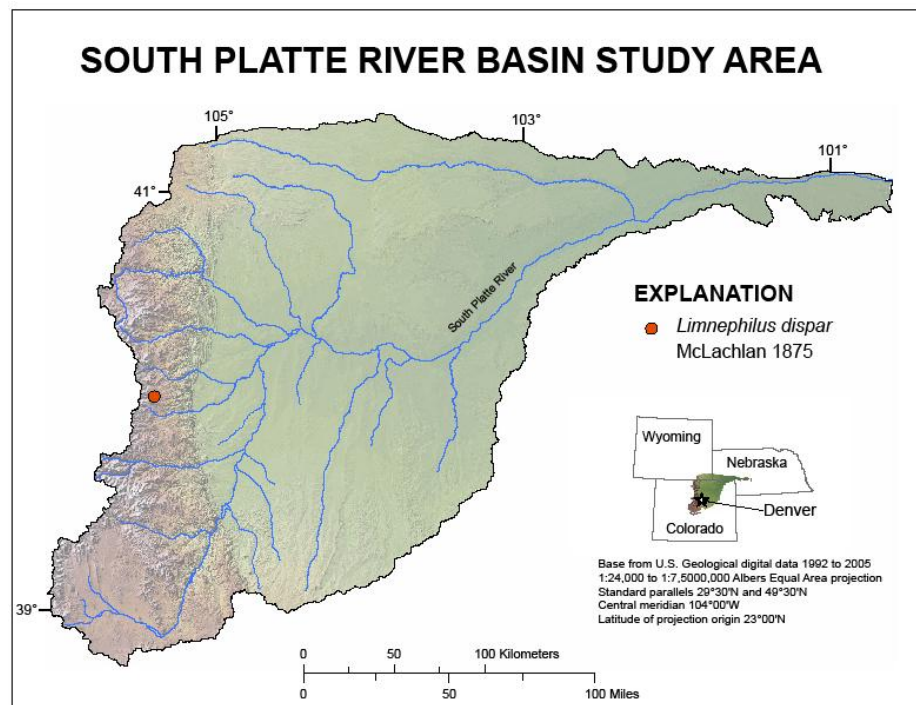
Distribution of *Limnephilus apache* collections in the South Platte River Basin.



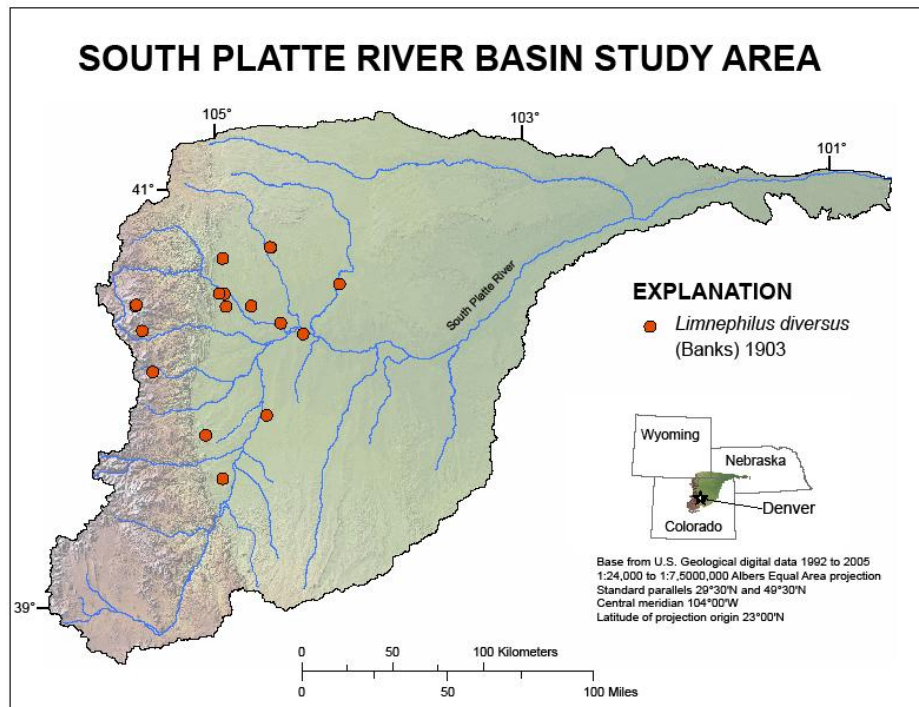
Distribution of *Limnephilus castor* collections in the South Platte River Basin.



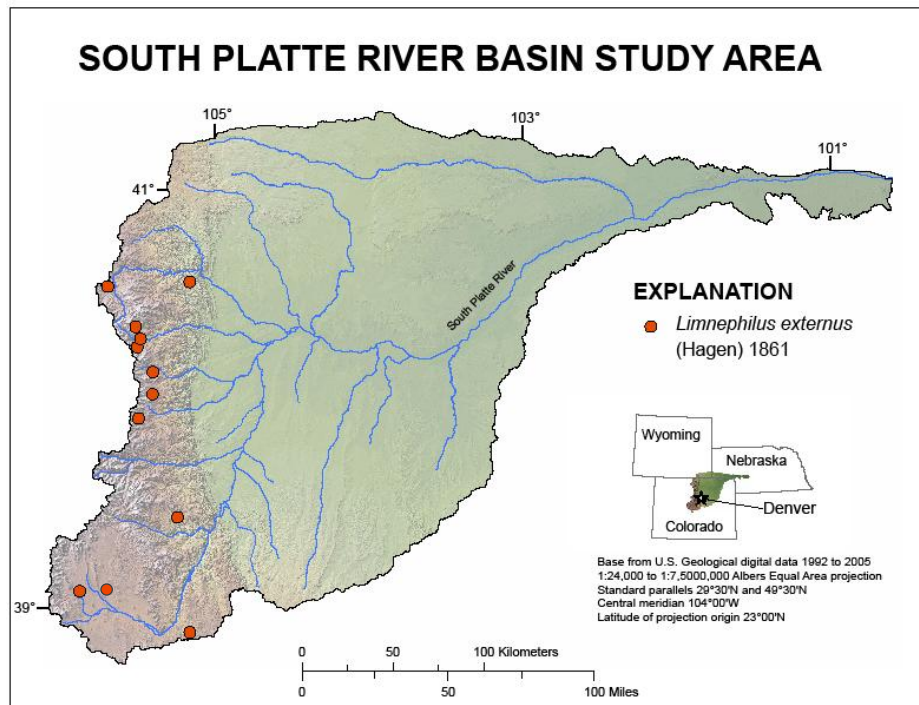
Distribution of *Limnephilus coloradensis* collections in the South Platte River Basin.



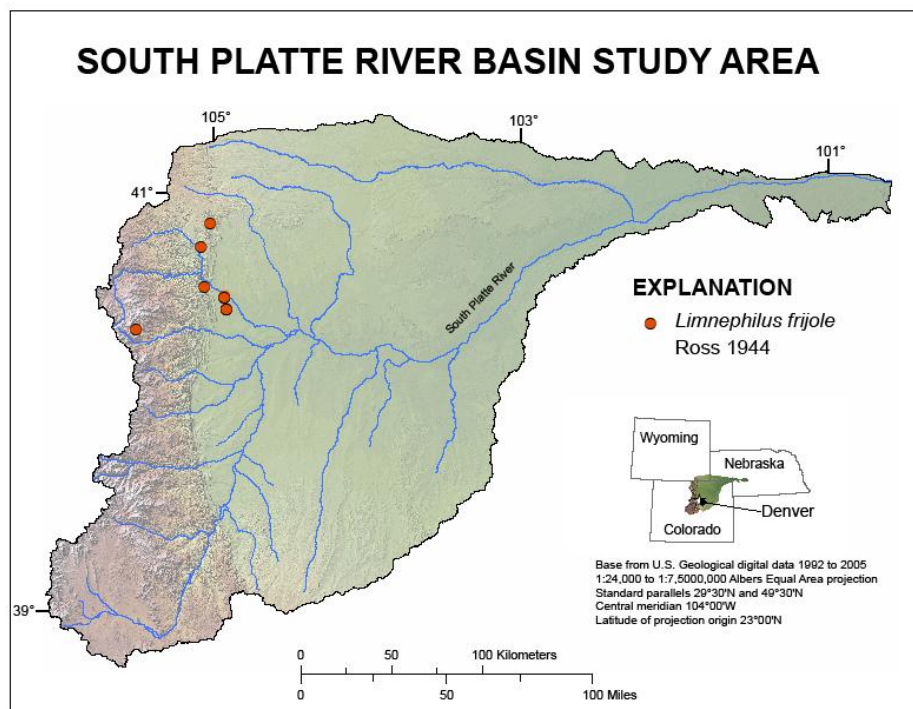
Distribution of *Limnephilus dispar* collections in the South Platte River Basin.



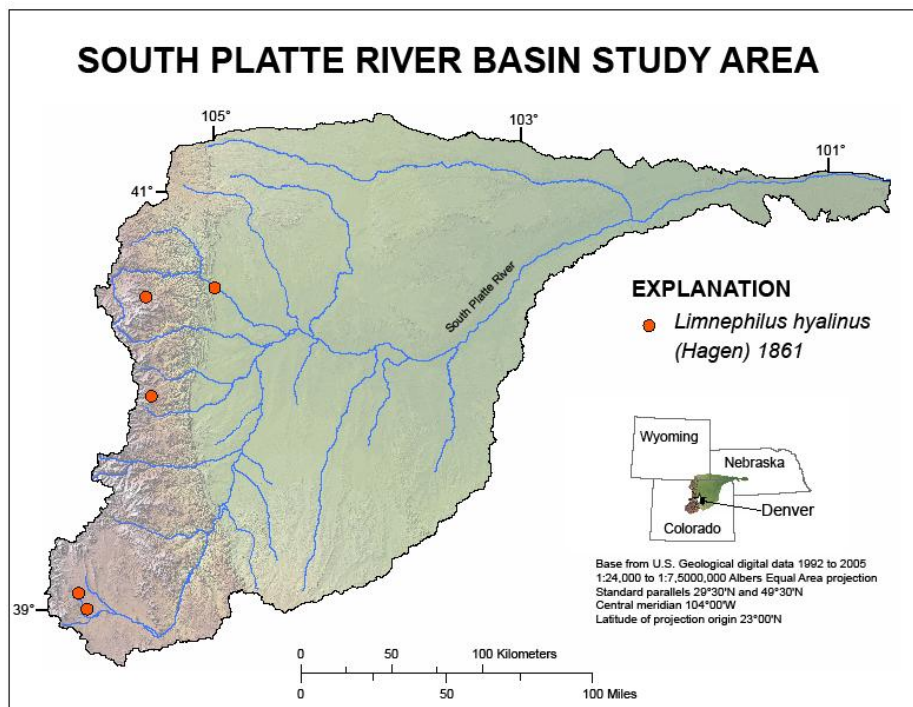
Distribution of *Limnephilus diversus* collections in the South Platte River Basin.



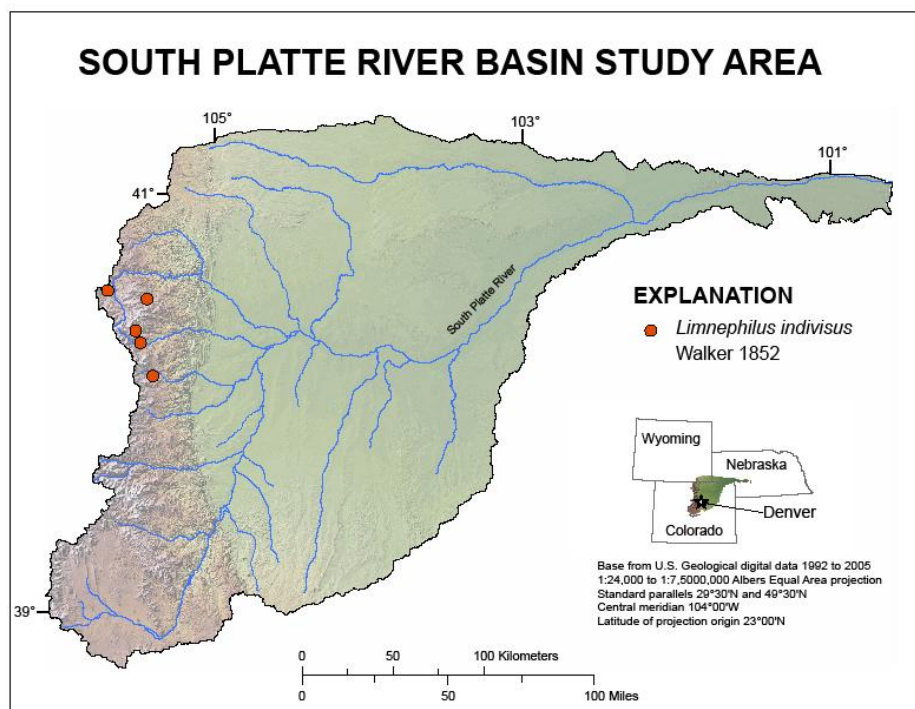
Distribution of *Limnephilus externus* collections in the South Platte River Basin.



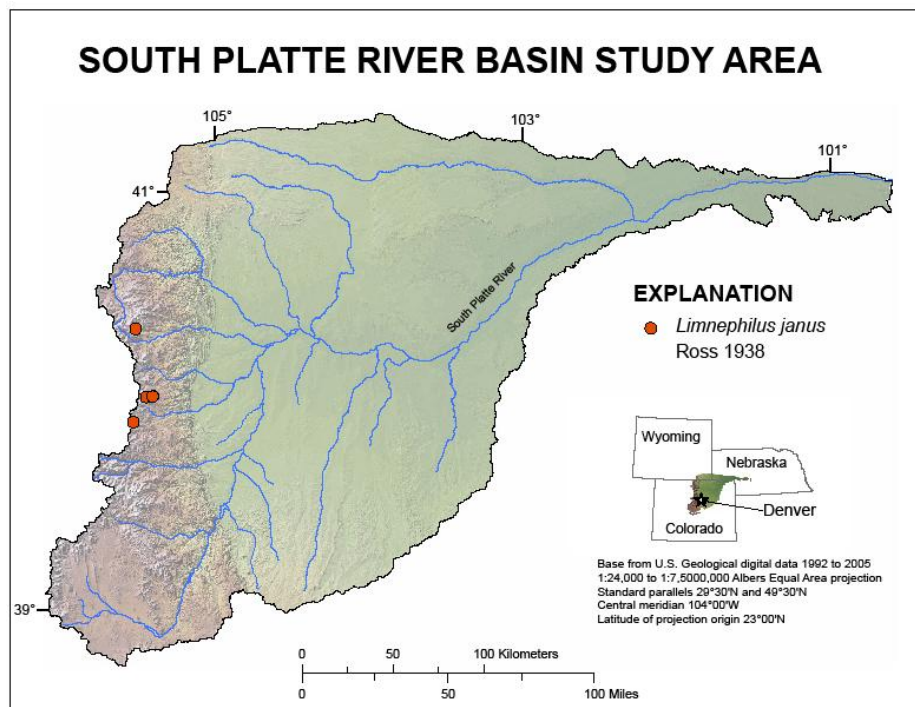
Distribution of *Limnephilus frijole* collections in the South Platte River Basin.



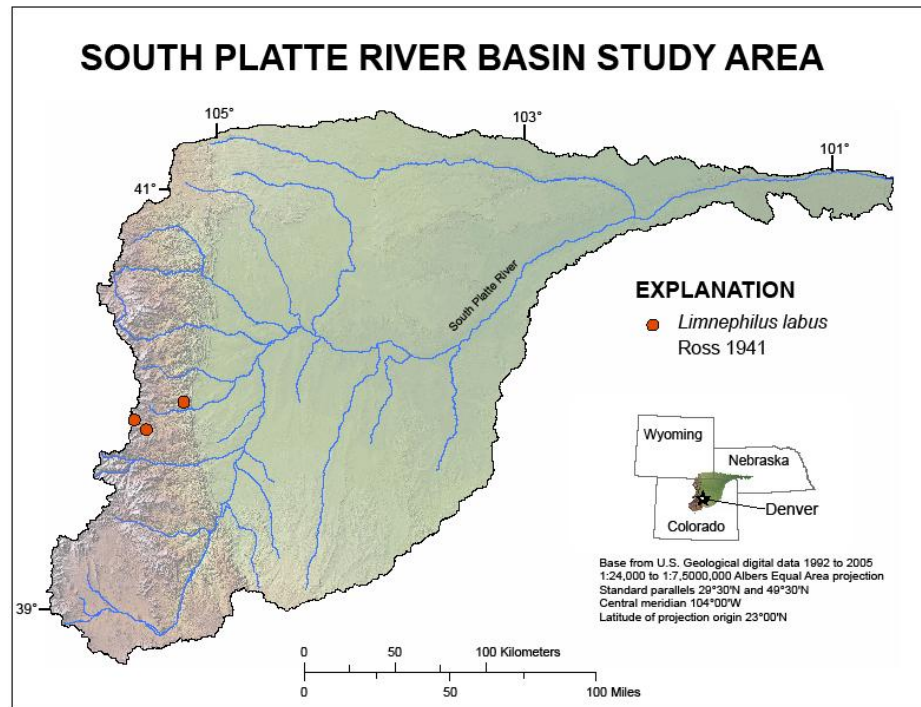
Distribution of *Limnephilus hyalinus* collections in the South Platte River Basin.



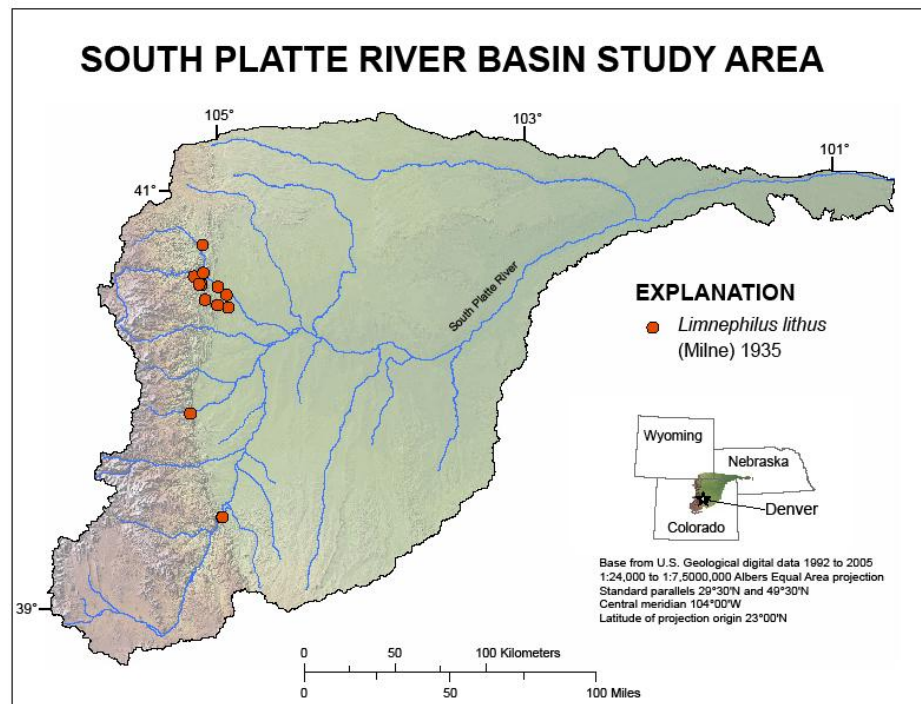
Distribution of *Limnephilus indivisus* collections in the South Platte River Basin.



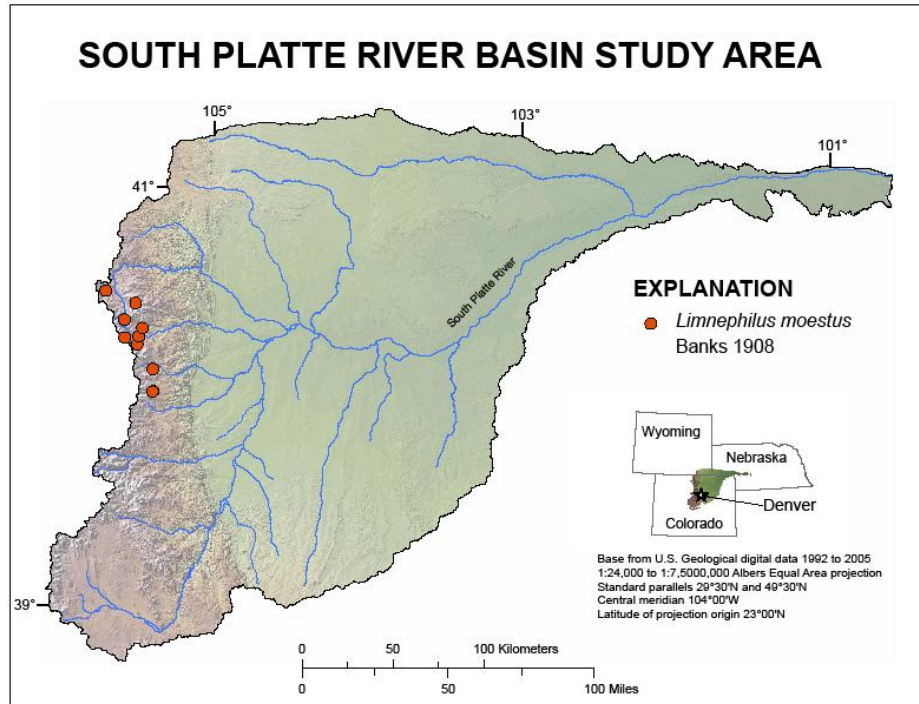
Distribution of *Limnephilus janus* collections in the South Platte River Basin.



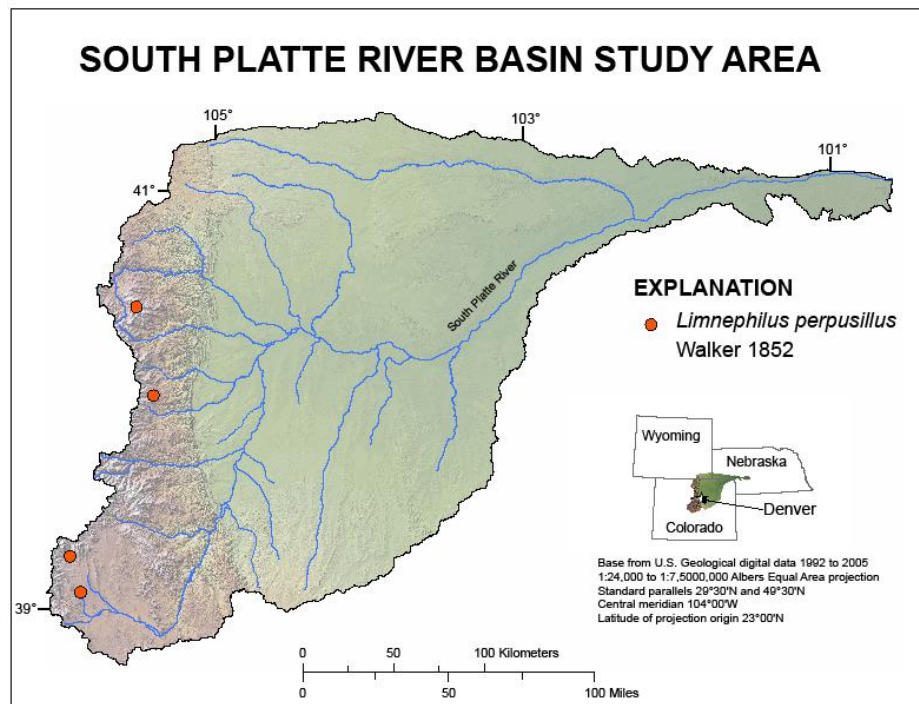
Distribution of *Limnephilus labus* collections in the South Platte River Basin.



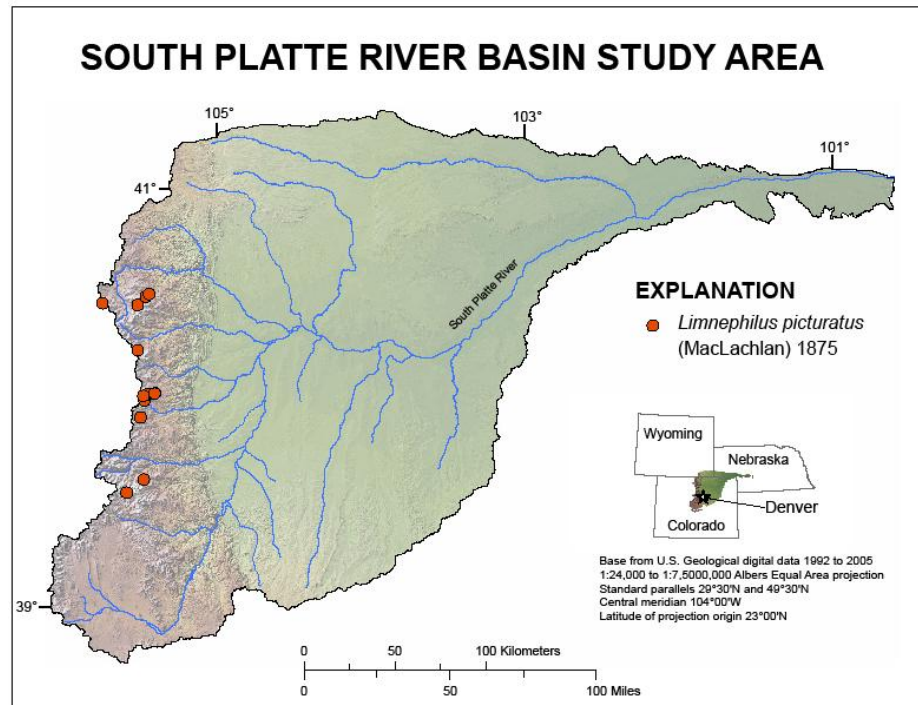
Distribution of *Limnephilus lithus* collections in the South Platte River Basin.



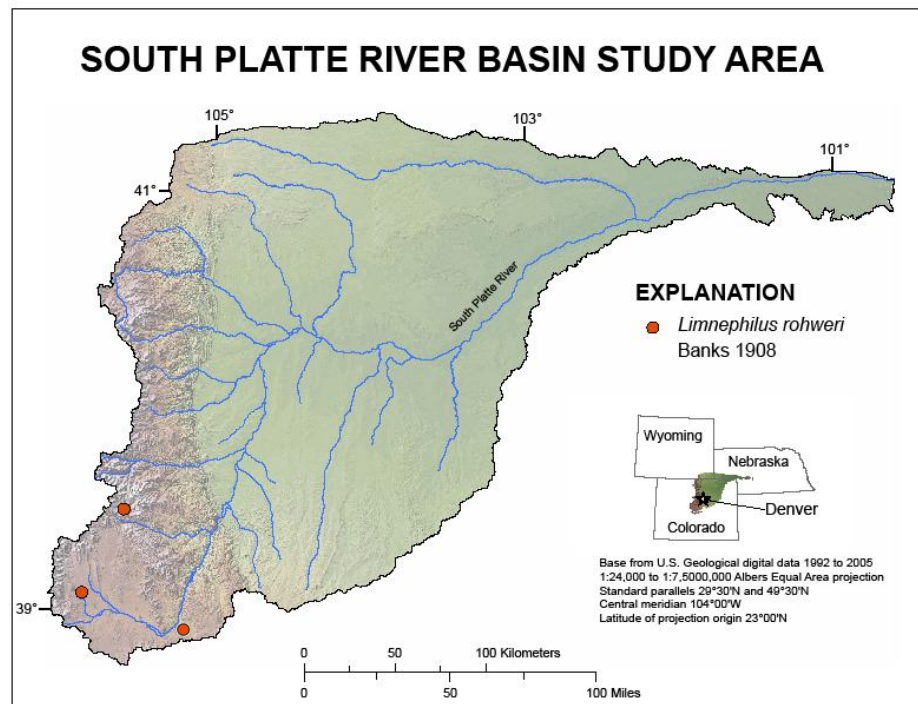
Distribution of *Limnephilus moestus* collections in the South Platte River Basin.



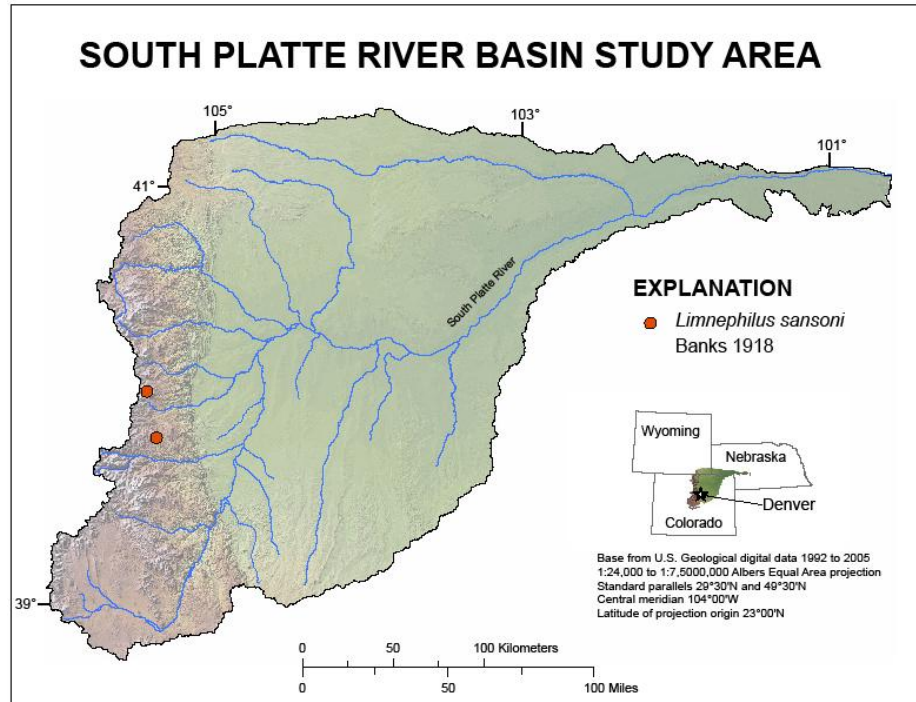
Distribution of *Limnephilus perpusillus* collections in the South Platte River Basin.



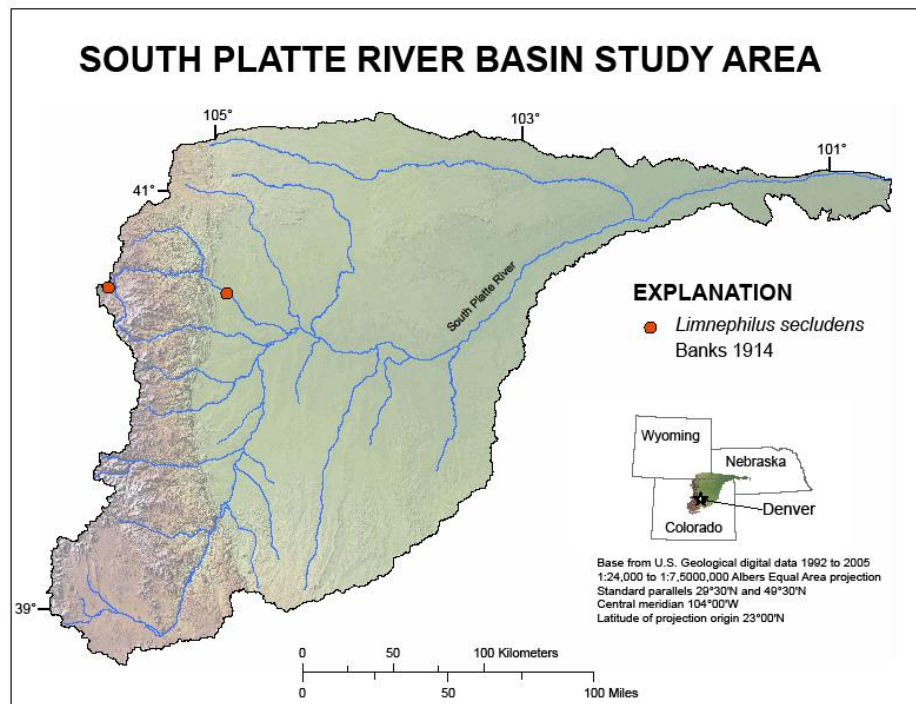
Distribution of *Limnephilus picturatus* collections in the South Platte River Basin.



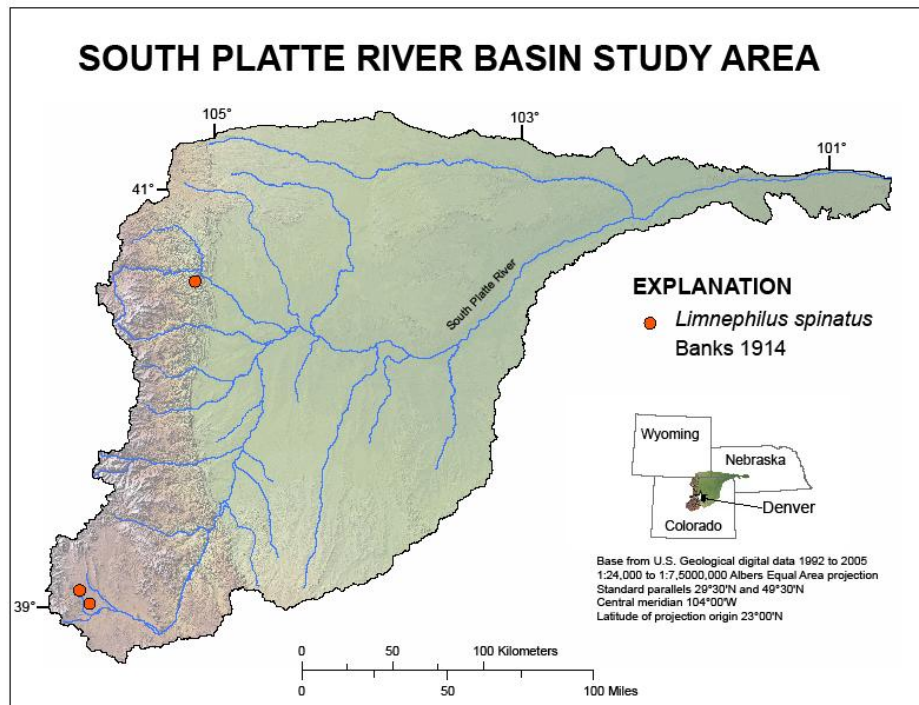
Distribution of *Limnephilus rohweri* collections in the South Platte River Basin.



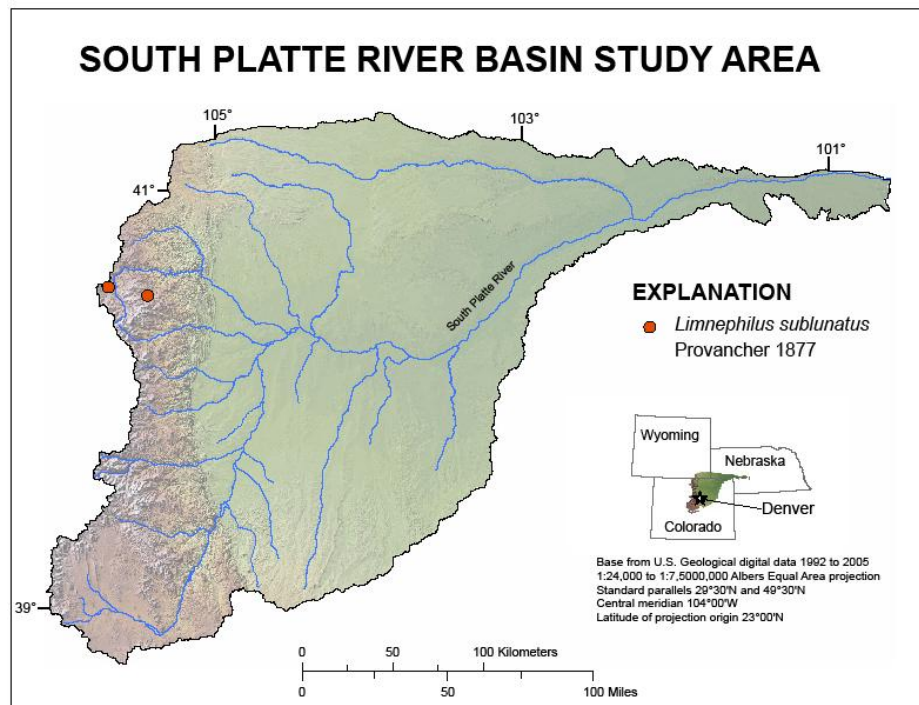
Distribution of *Limnephilus sansoni* collections in the South Platte River Basin.



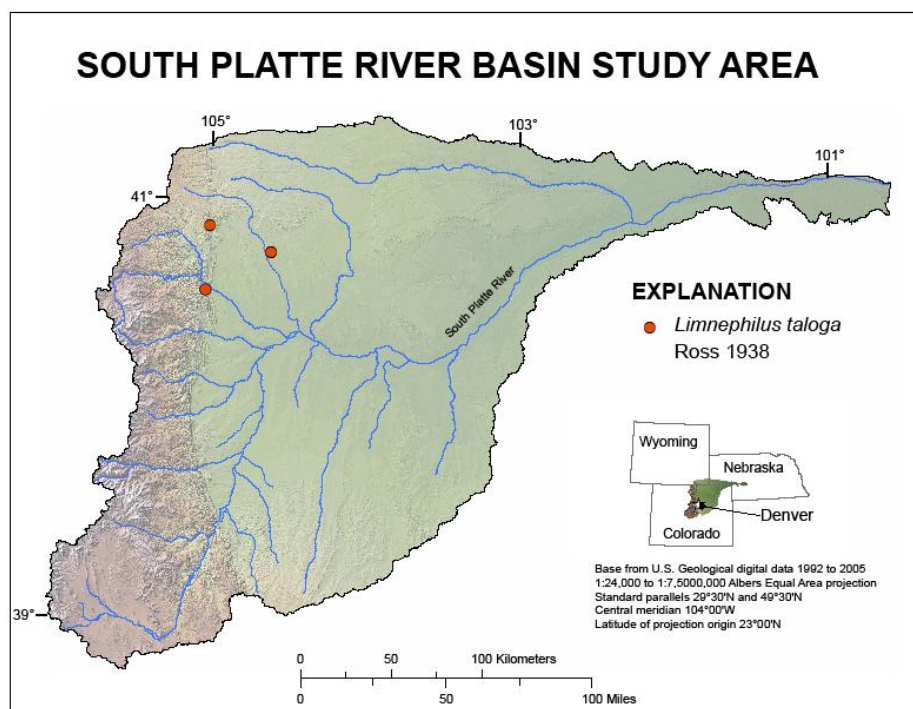
Distribution of *Limnephilus secludens* collections in the South Platte River Basin.



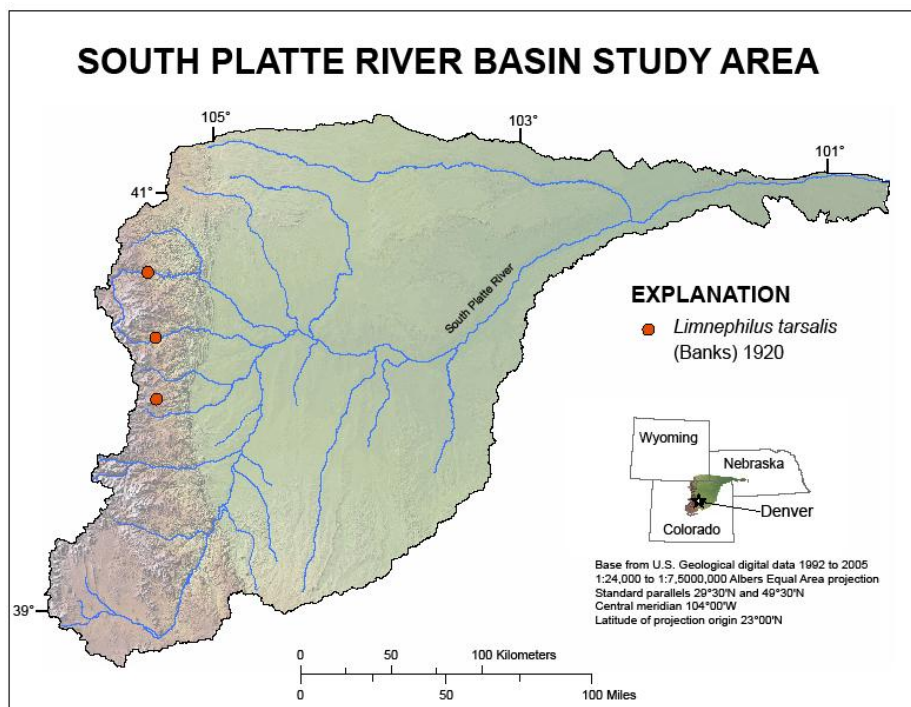
Distribution of *Limnephilus spinatus* collections in the South Platte River Basin.



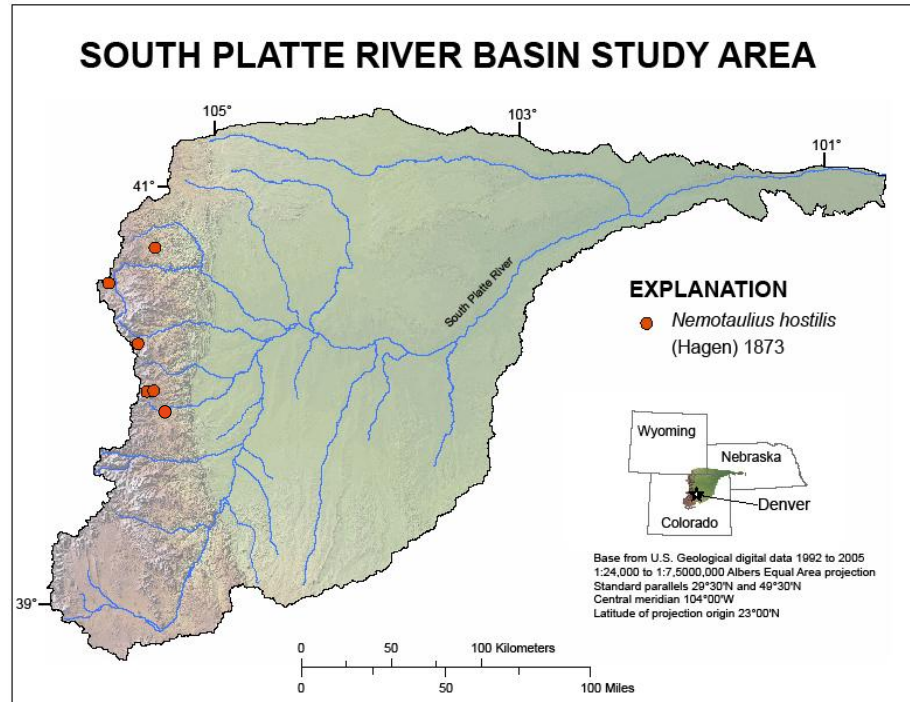
Distribution of *Limnephilus sublunatus* collections in the South Platte River Basin.



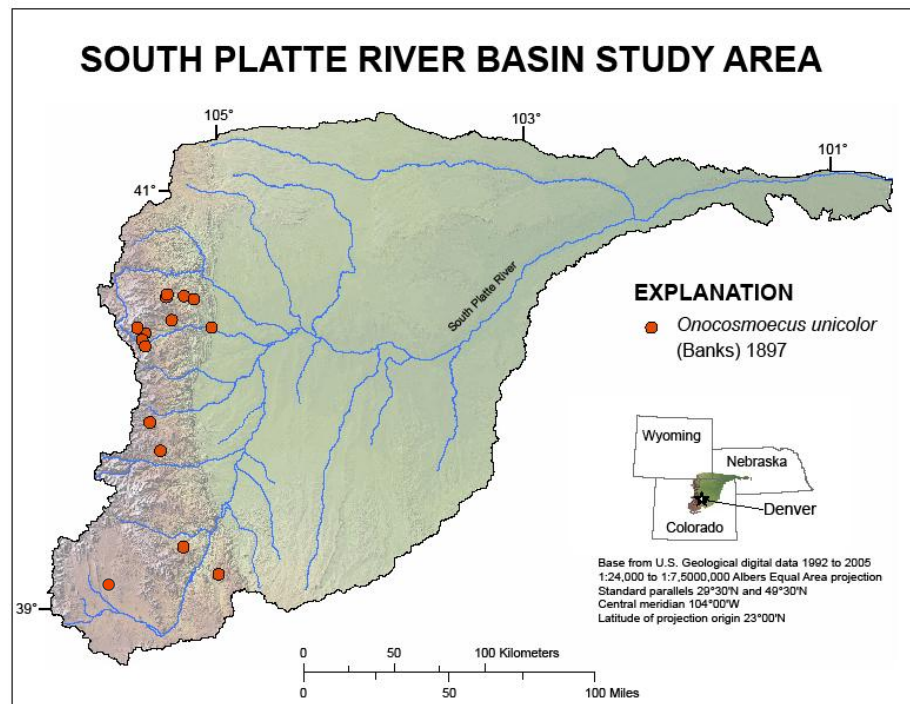
Distribution of *Limnephilus taloga* collections in the South Platte River Basin.



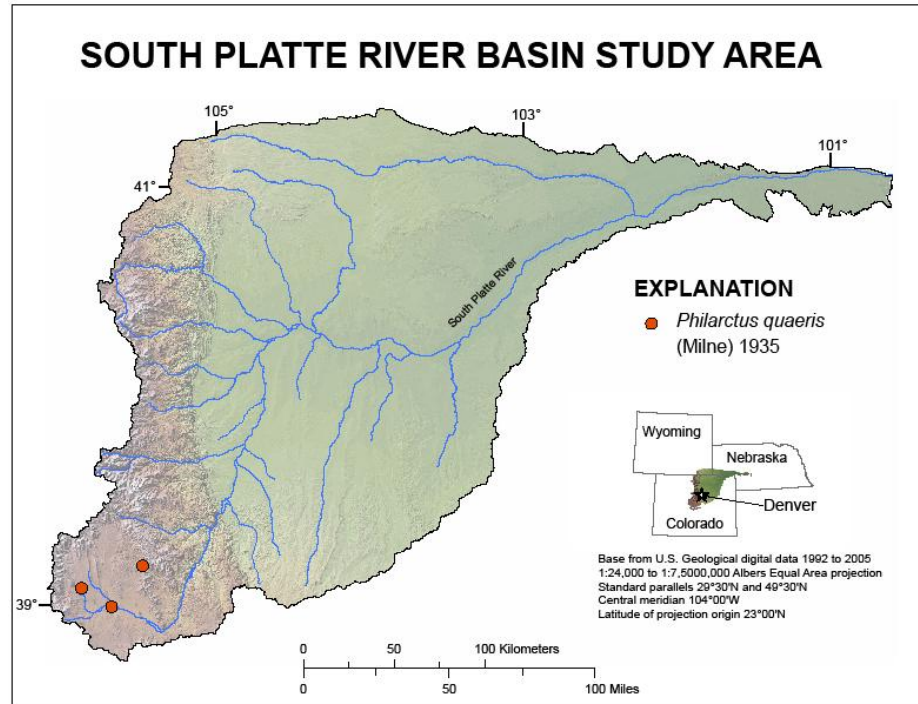
Distribution of *Limnephilus tarsalis* collections in the South Platte River Basin.



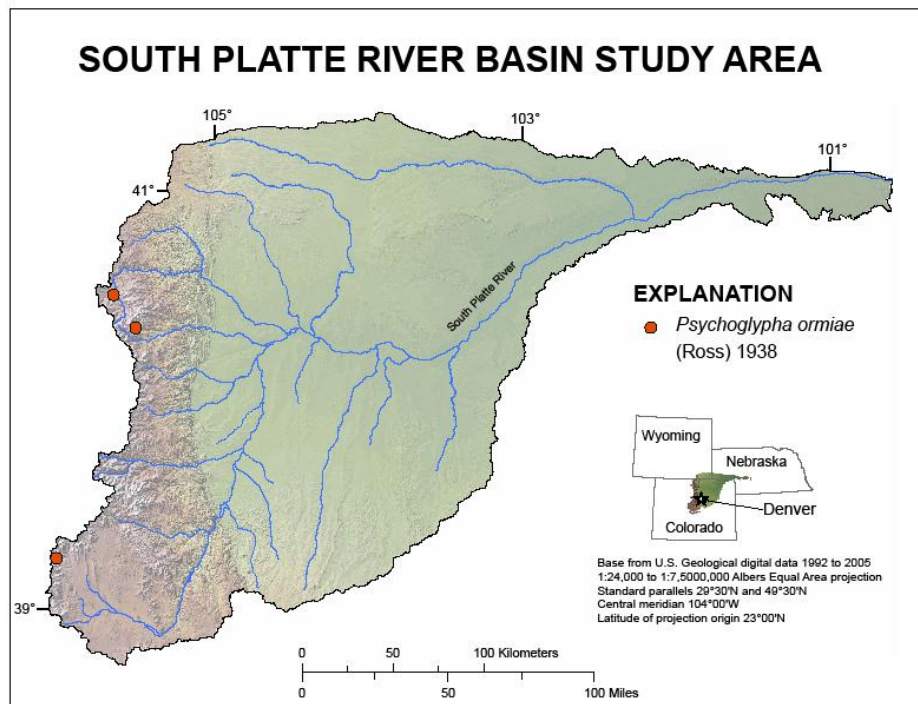
Distribution of *Nemotaulius hostilis* collections in the South Platte River Basin.



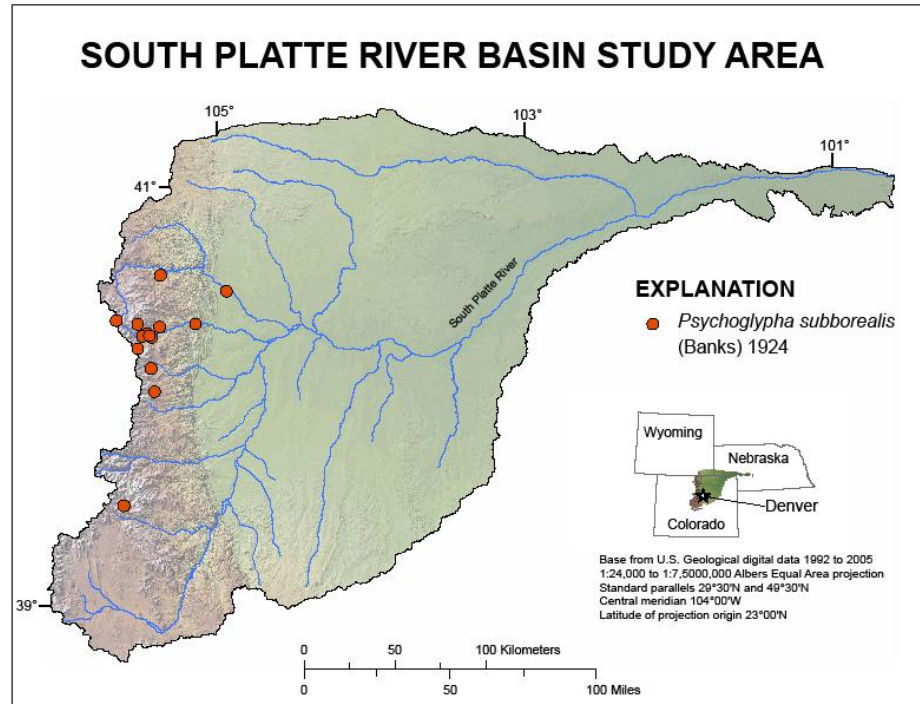
Distribution of *Onocosmoecus unicolor* collections in the South Platte River Basin.



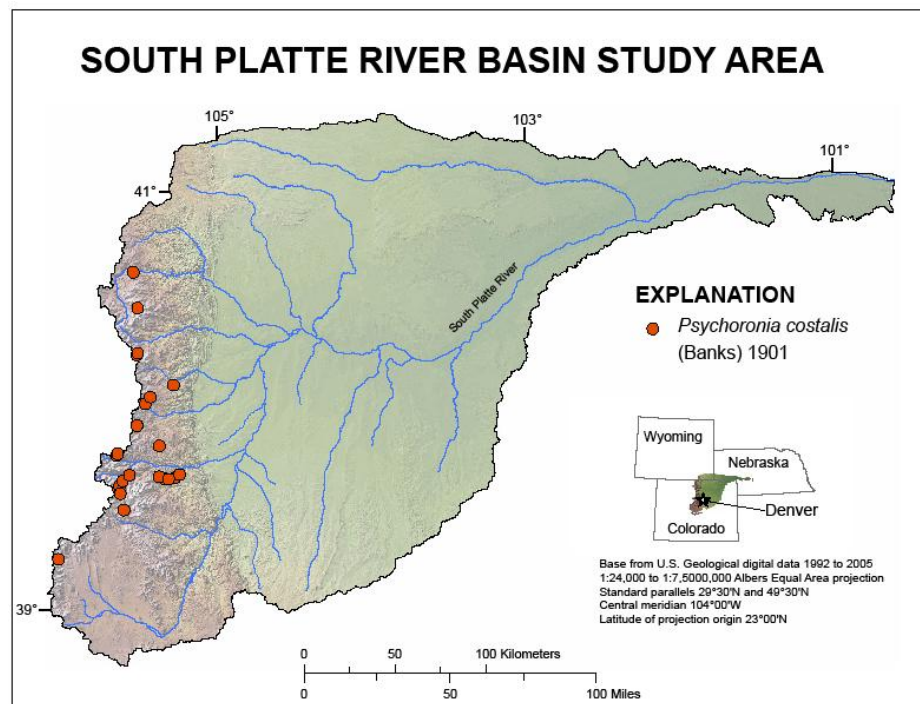
Distribution of *Philarctus quaeris* collections in the South Platte River Basin.



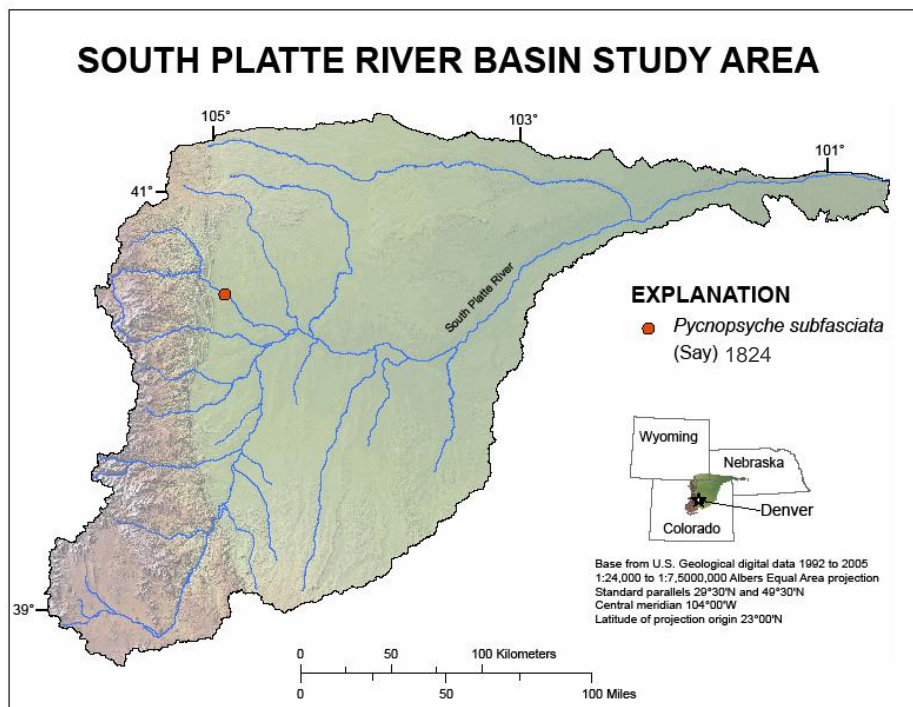
Distribution of *Psychoglypha ormaie* collections in the South Platte River Basin.



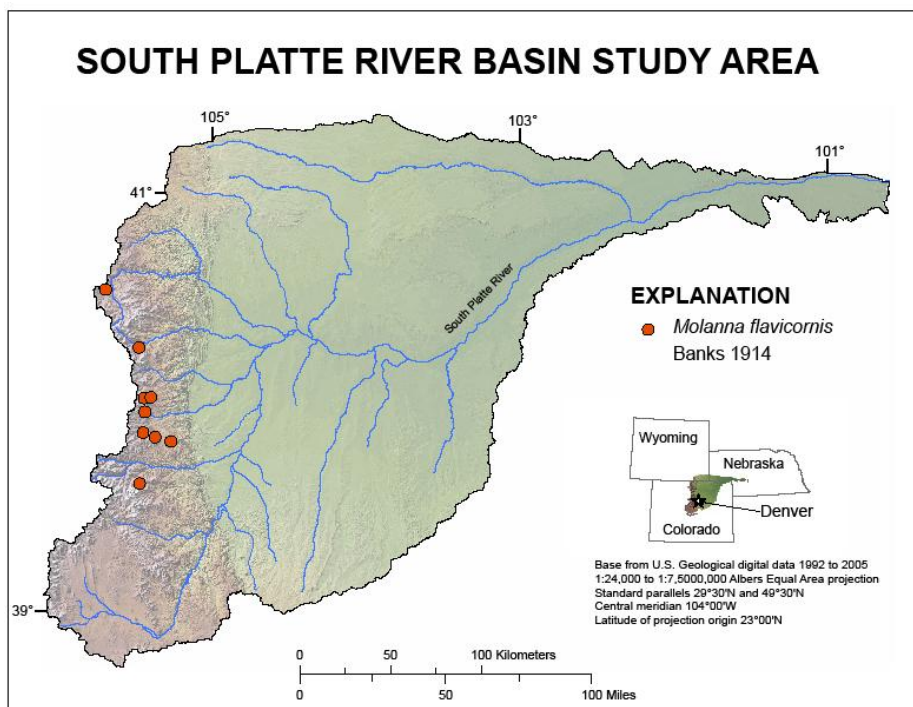
Distribution of *Psychoglypha subborealis* collections in the South Platte River Basin.



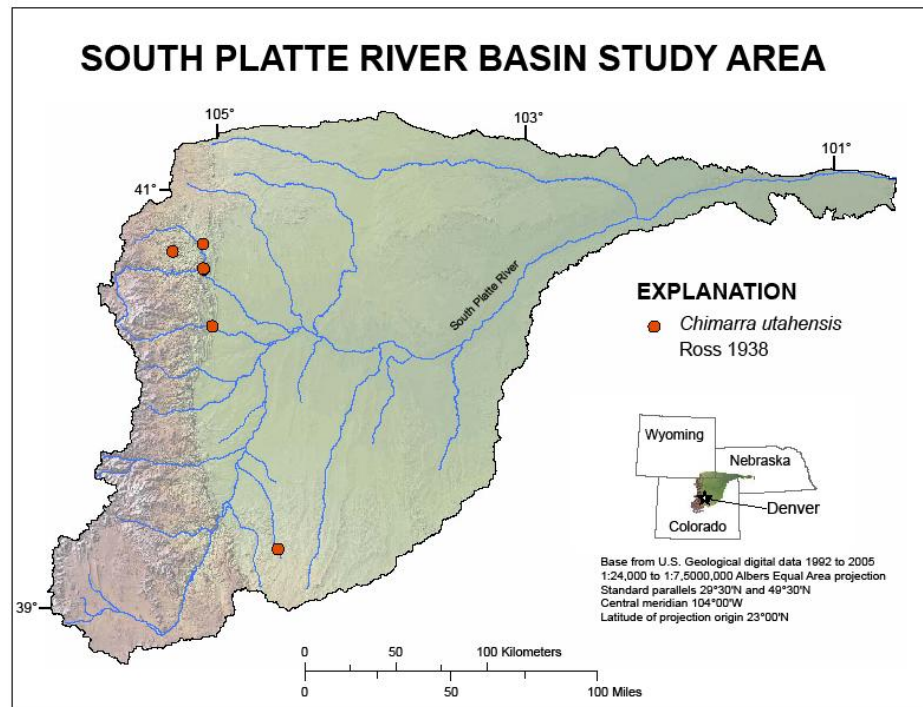
Distribution of *Psychoronia costalis* collections in the South Platte River Basin.



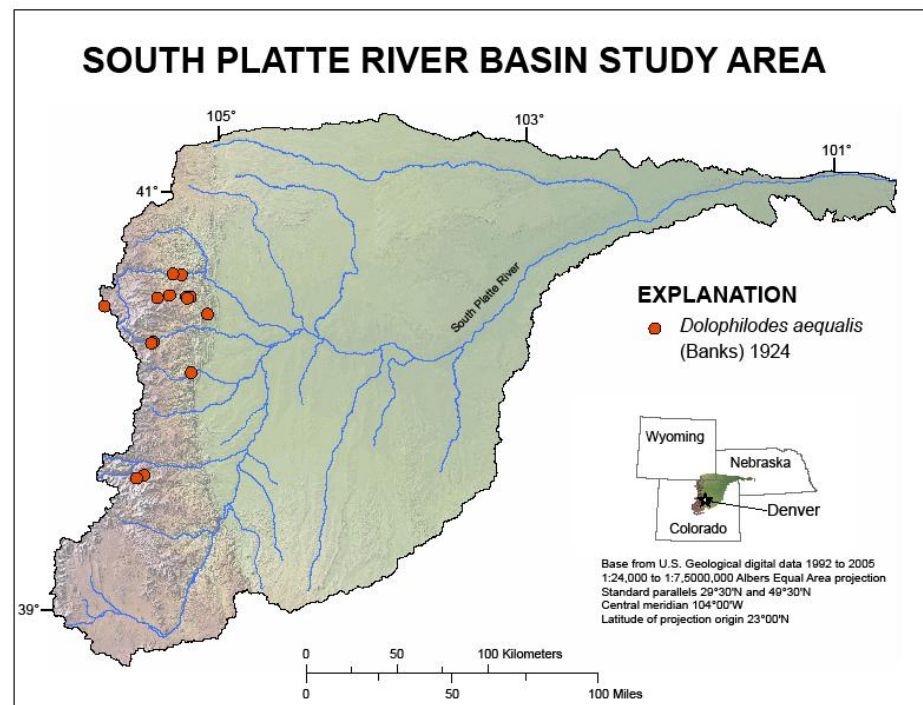
Distribution of *Pycnopsyche subfasciata* collections in the South Platte River Basin.



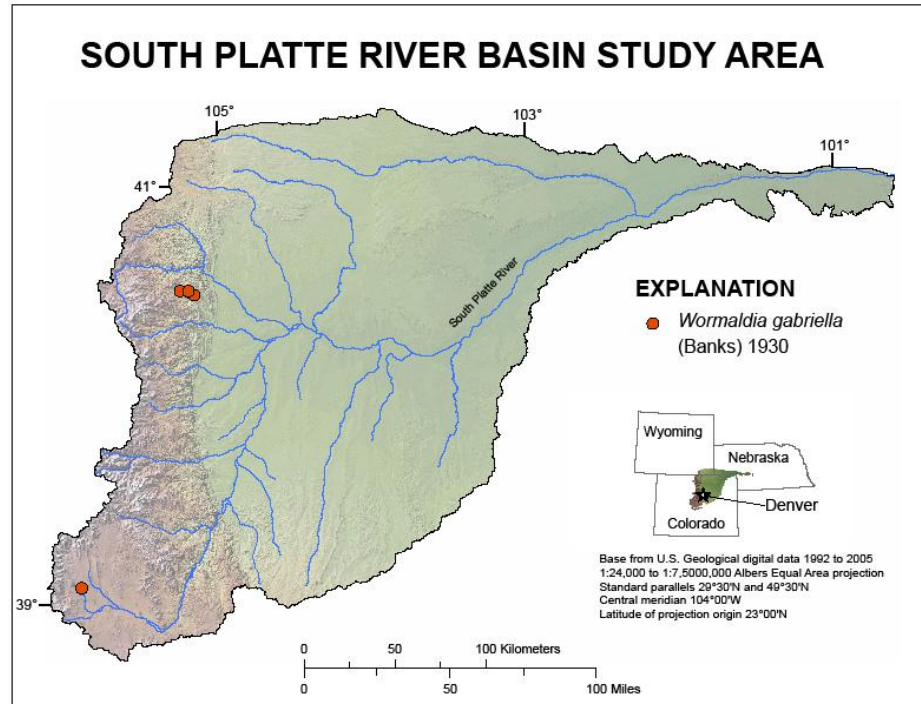
Distribution of *Molanna flavicornis* collections in the South Platte River Basin.



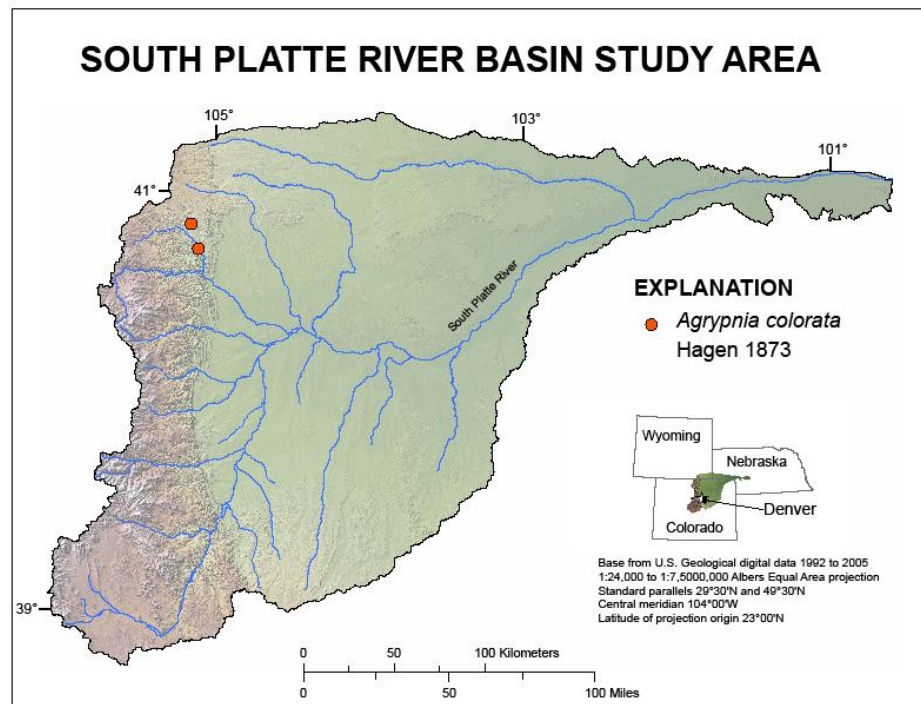
Distribution of *Chimarra utahensis* collections in the South Platte River Basin.



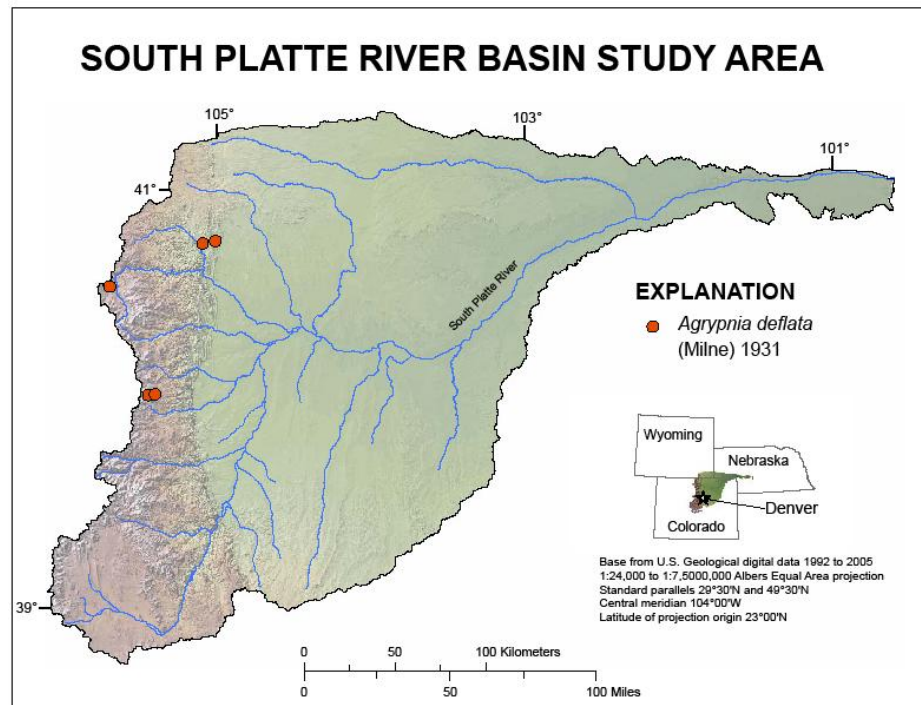
Distribution of *Dolophilodes aequalis* collections in the South Platte River Basin.



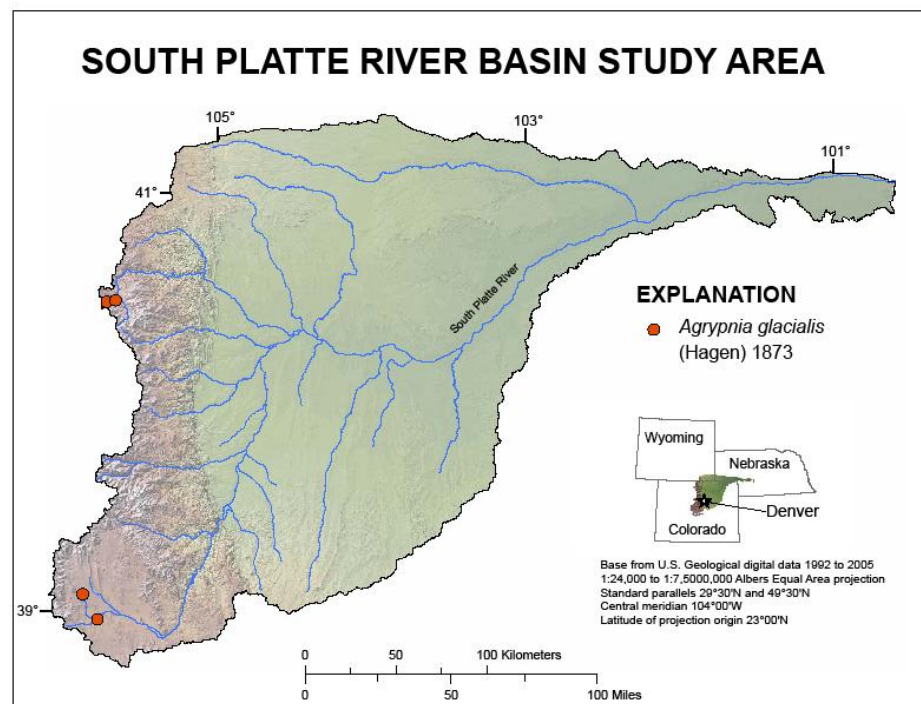
Distribution of *Wormaldia gabriella* collections in the South Platte River Basin.



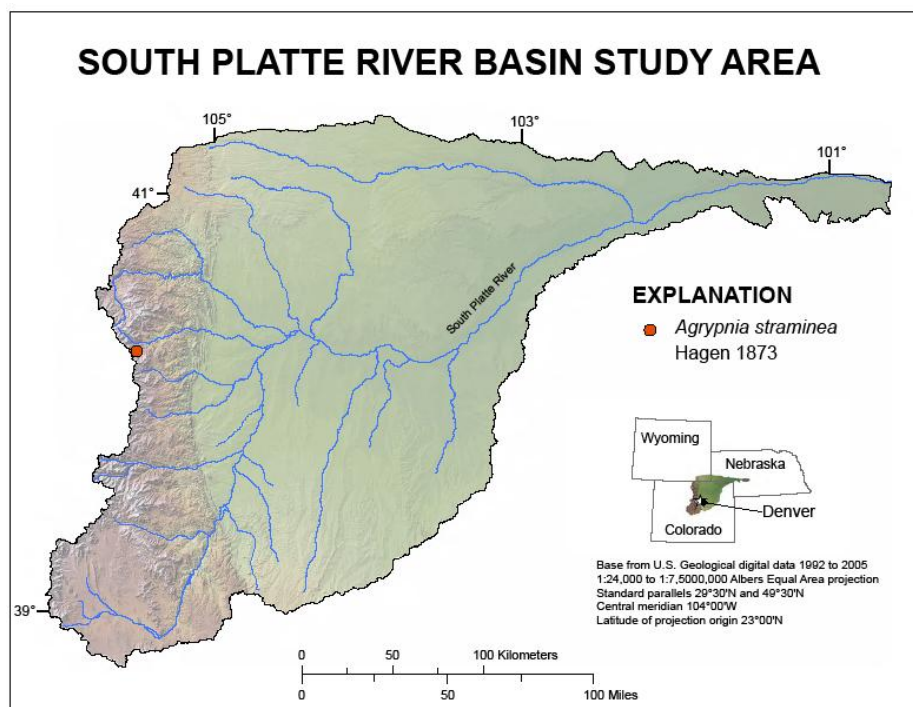
Distribution of *Agrypnia colorata* collections in the South Platte River Basin.



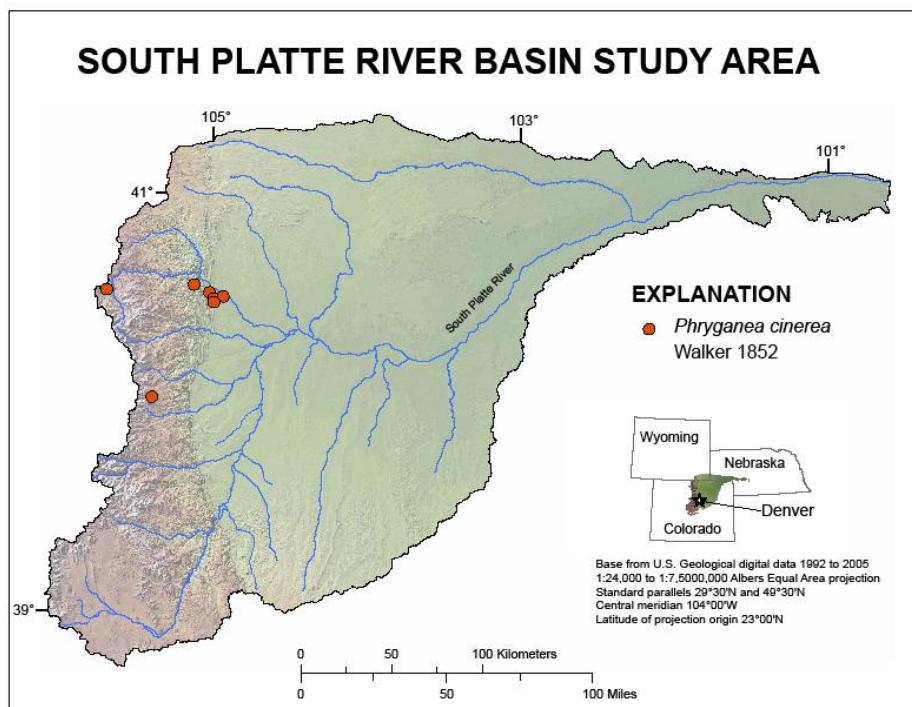
Distribution of *Agrypnia deflata* collections in the South Platte River Basin.



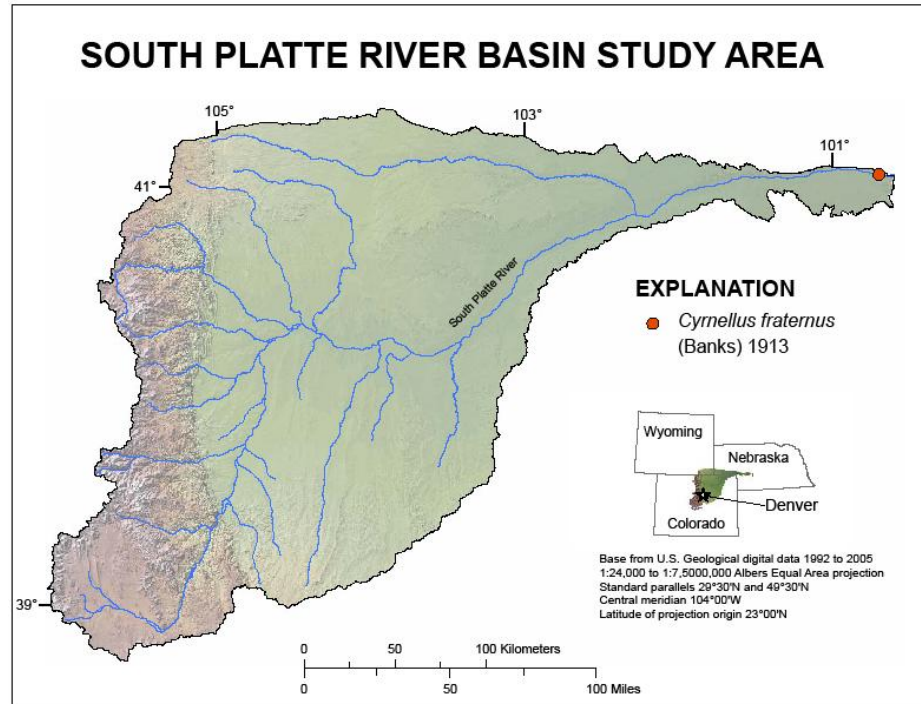
Distribution of *Agrypnia glacialis* collections in the South Platte River Basin.



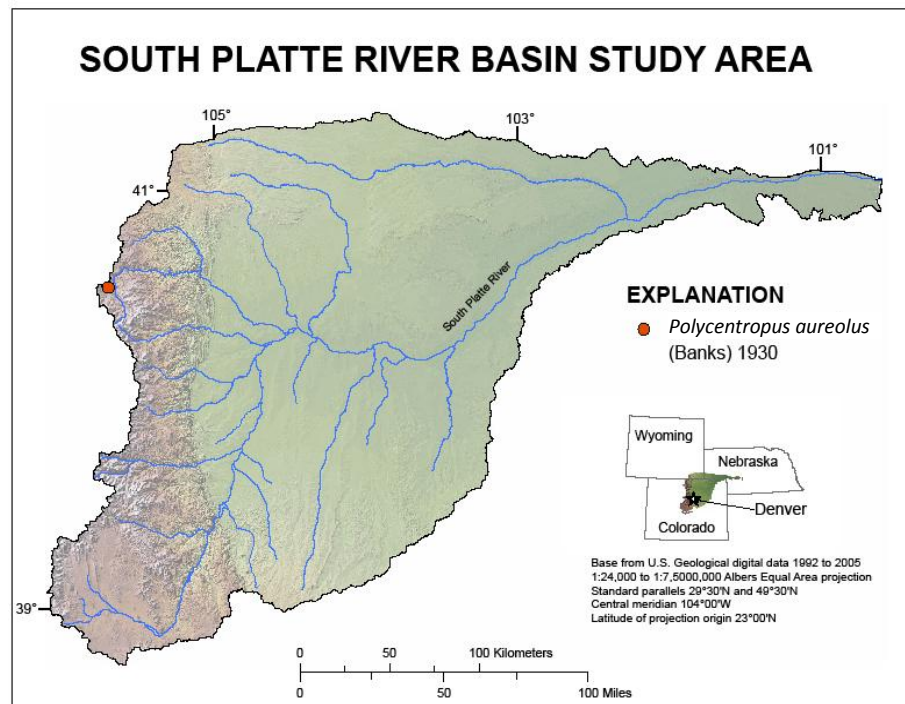
Distribution of *Agrypnia straminea* collections in the South Platte River Basin.



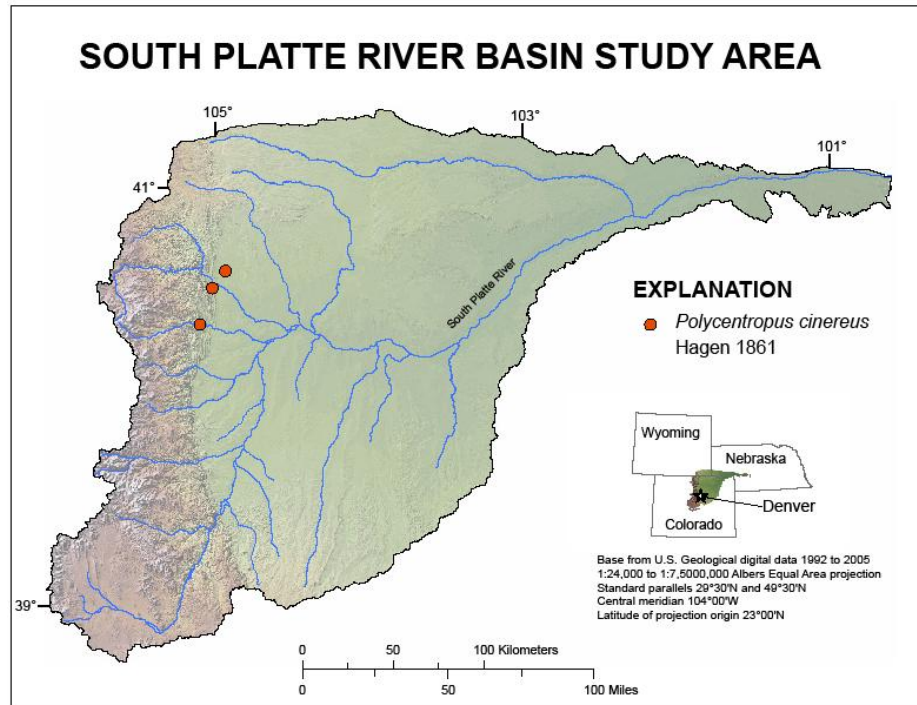
Distribution of *Phryganea cinerea* collections in the South Platte River Basin.



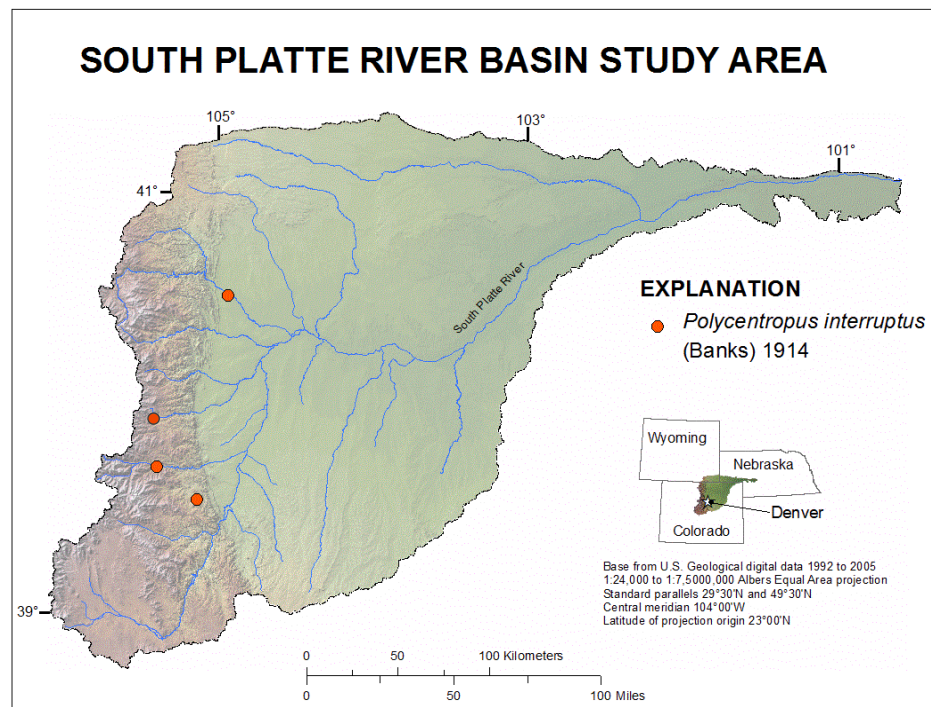
Distribution of *Cynnellus fraternus* collections in the South Platte River Basin.



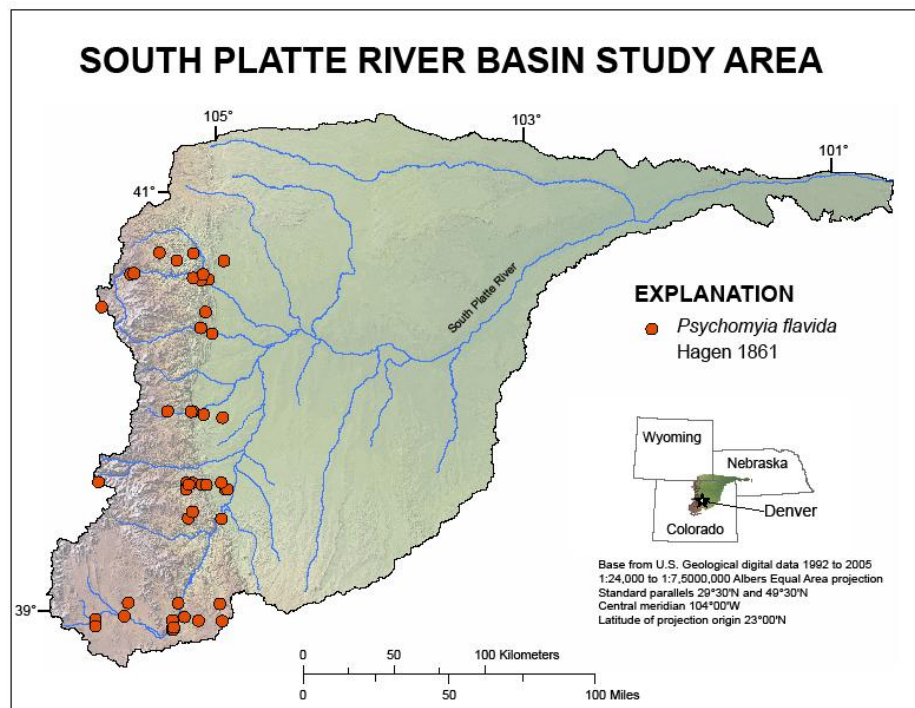
Distribution of *Polycentropus aureolus* collections in the South Platte River Basin.



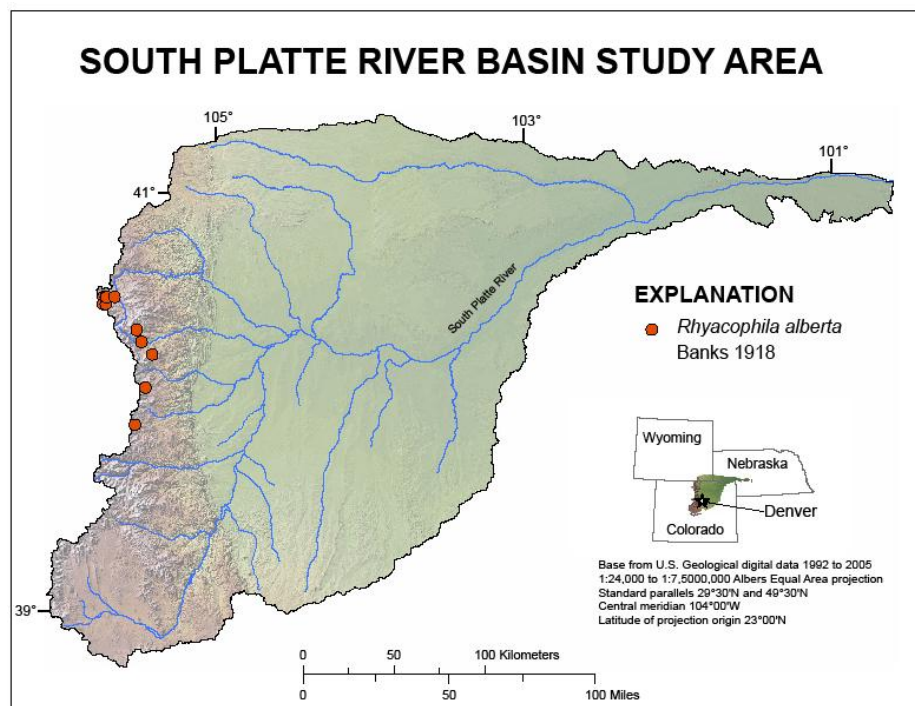
Distribution of *Polycentropus cinereus* collections in the South Platte River Basin.



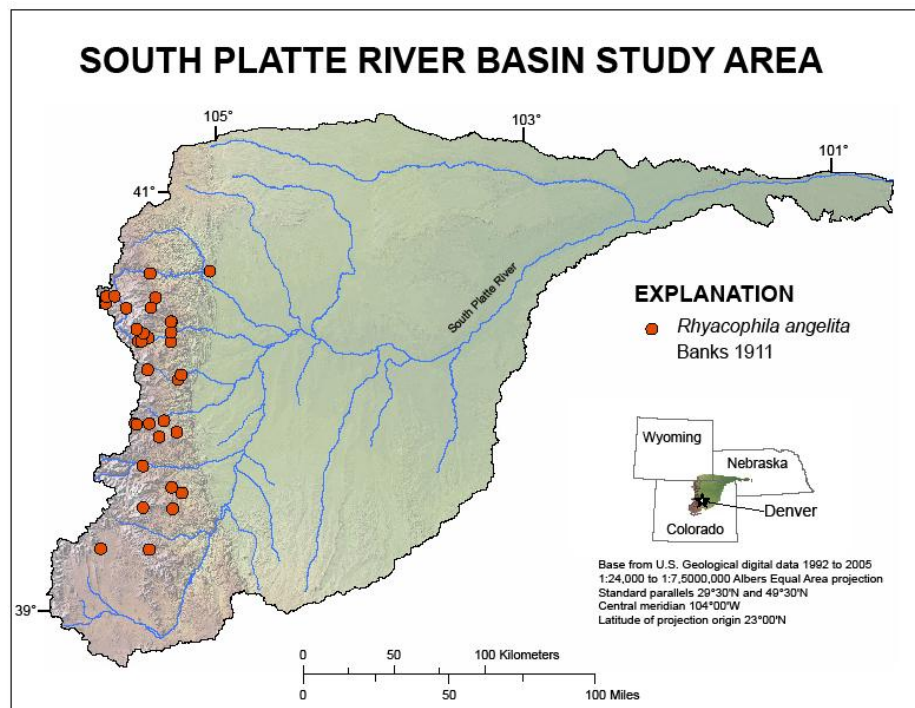
Distribution of *Polycentropus interruptus* collections in the South Platte River Basin.



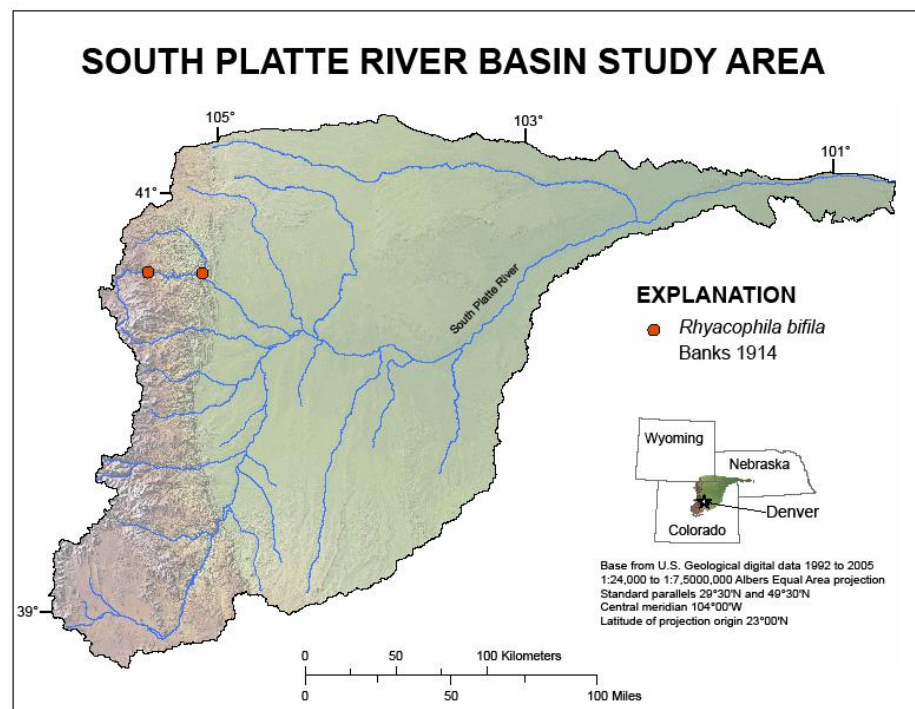
Distribution of *Psychomyia flavida* collections in the South Platte River Basin.



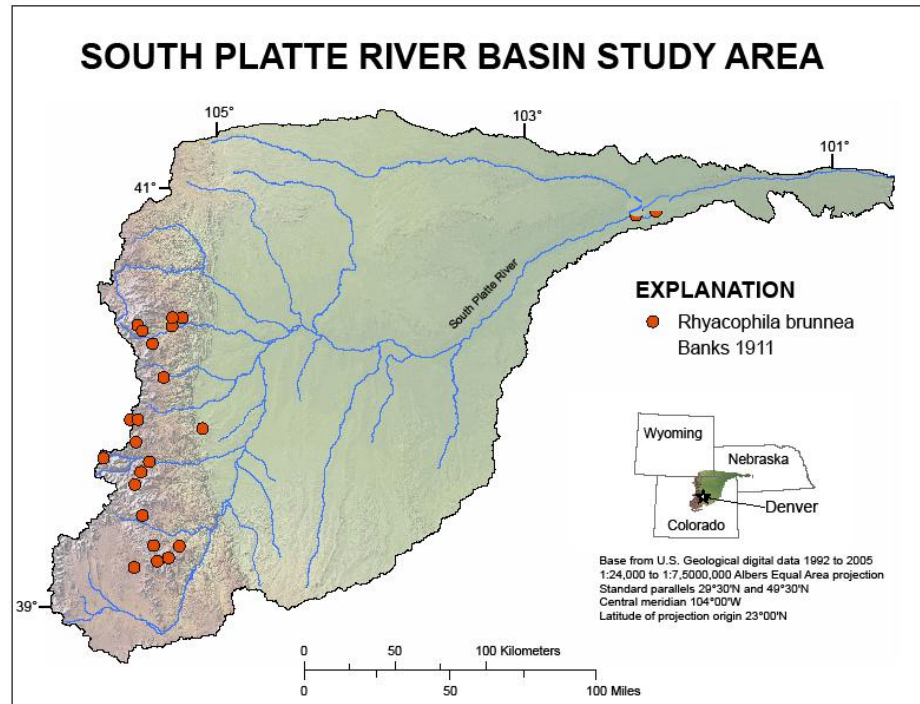
Distribution of *Rhyacophila alberta* collections in the South Platte River Basin.



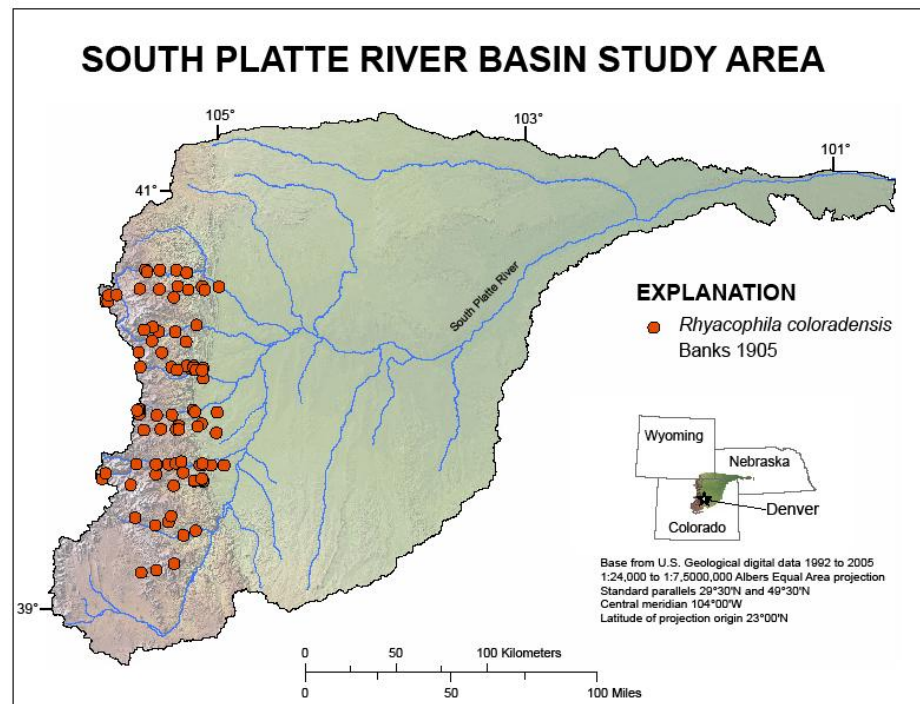
Distribution of *Rhyacophila angelita* collections in the South Platte River Basin.



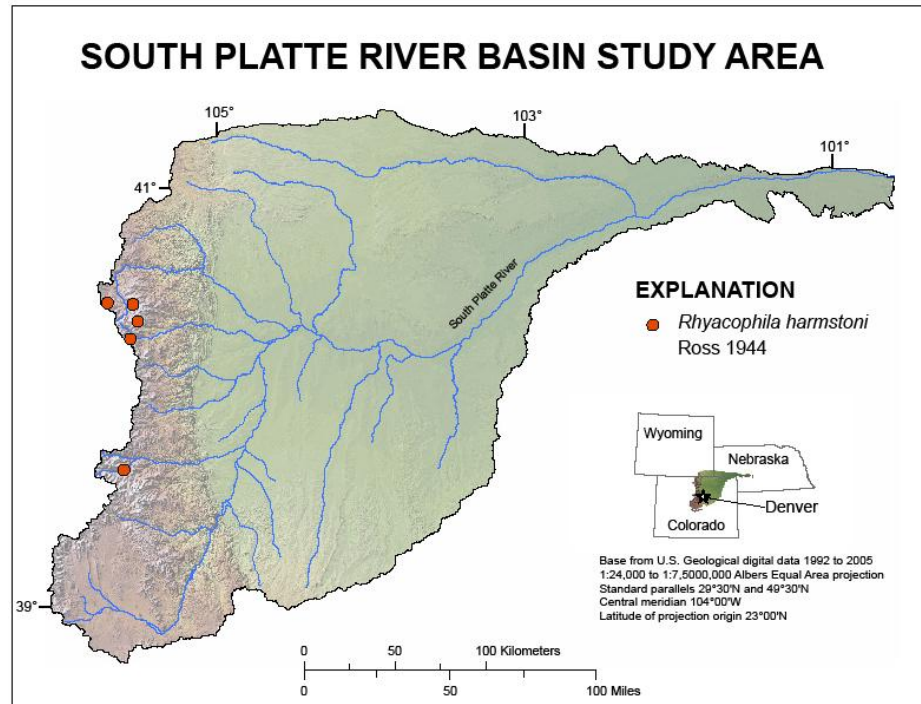
Distribution of *Rhyacophila bifila* collections in the South Platte River Basin.



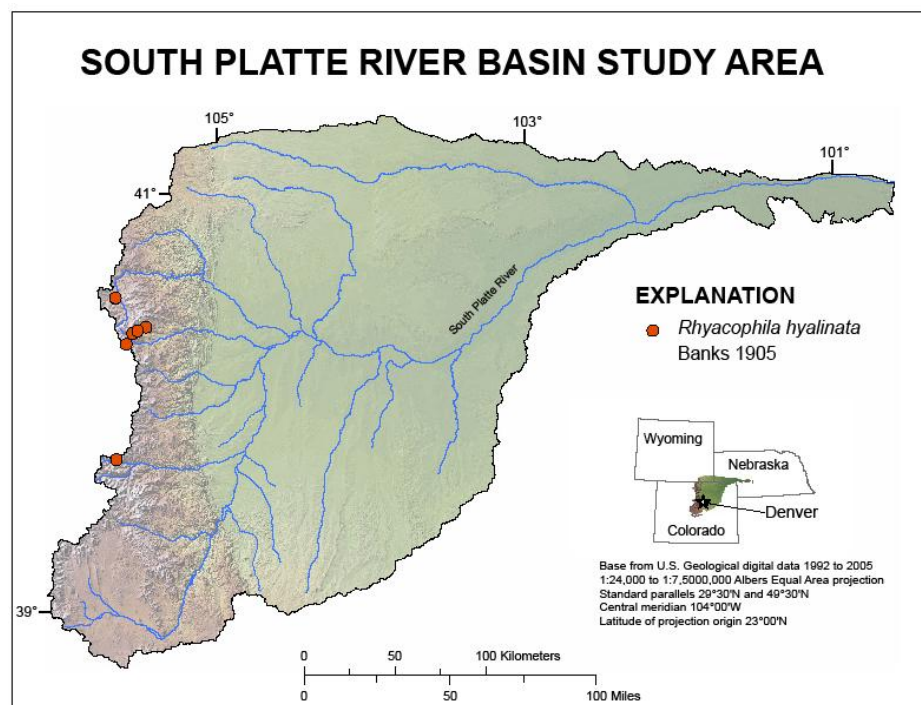
Distribution of *Rhyacophila brunnea* collections in the South Platte River Basin.



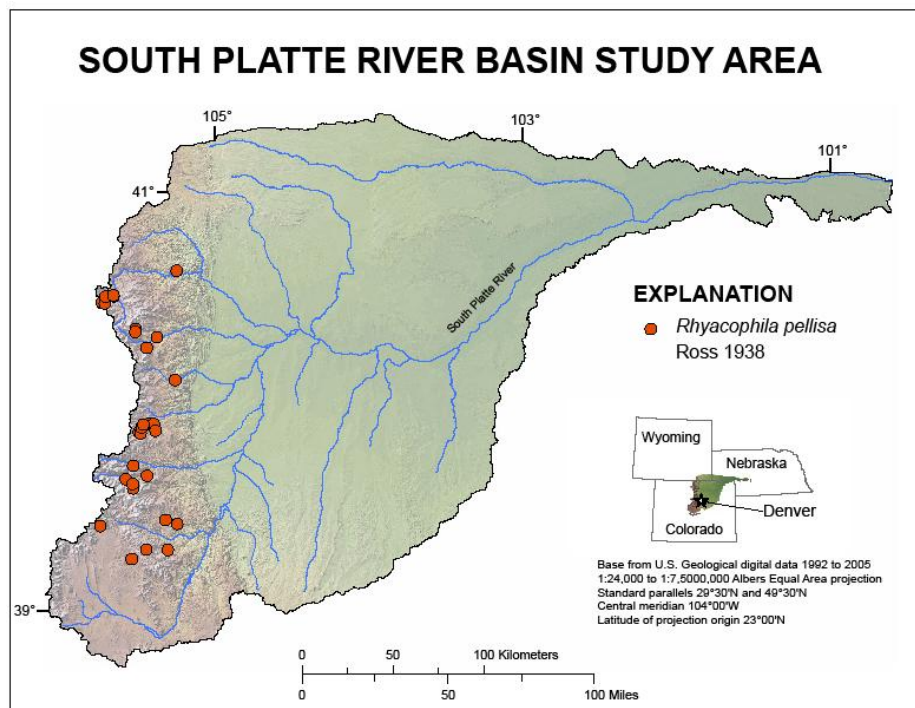
Distribution of *Rhyacophila coloradensis* collections in the South Platte River Basin.



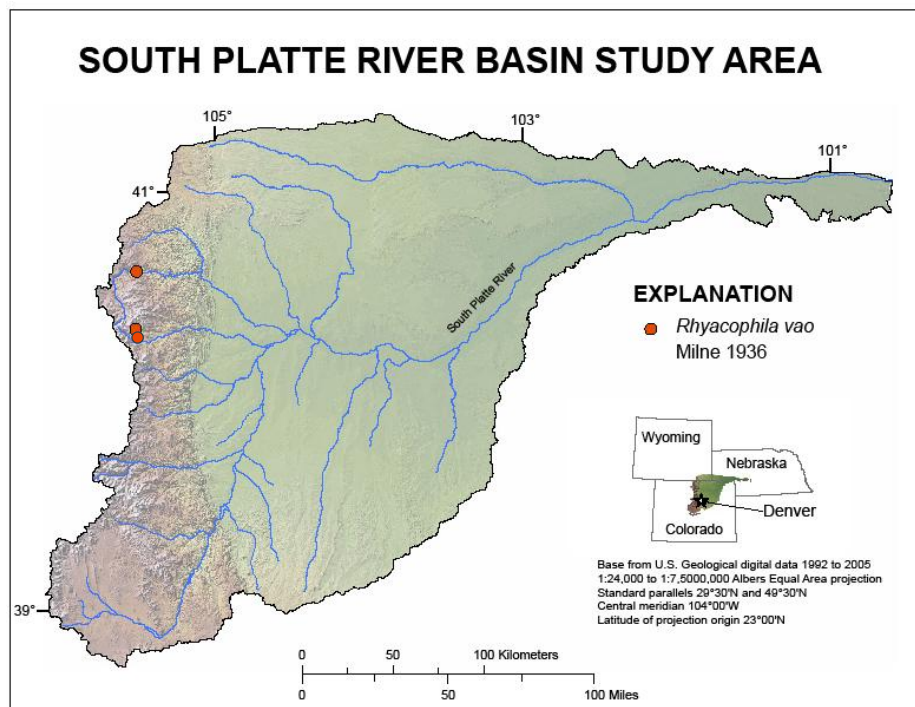
Distribution of *Rhyacophila harmstoni* collections in the South Platte River Basin.



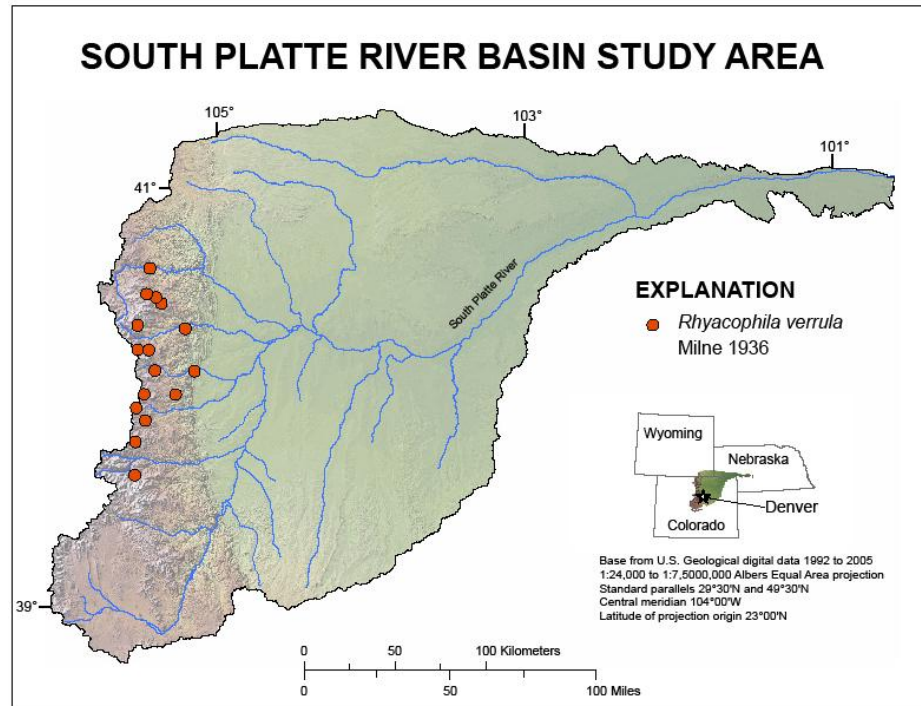
Distribution of *Rhyacophila hyalinata* collections in the South Platte River Basin.



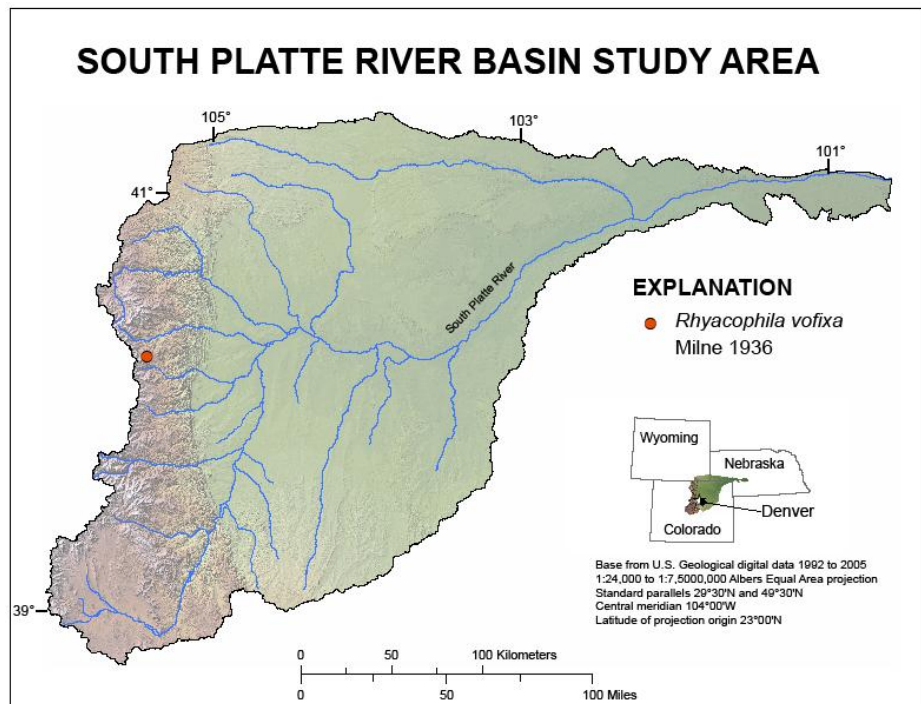
Distribution of *Rhyacophila pellisa* collections in the South Platte River Basin.



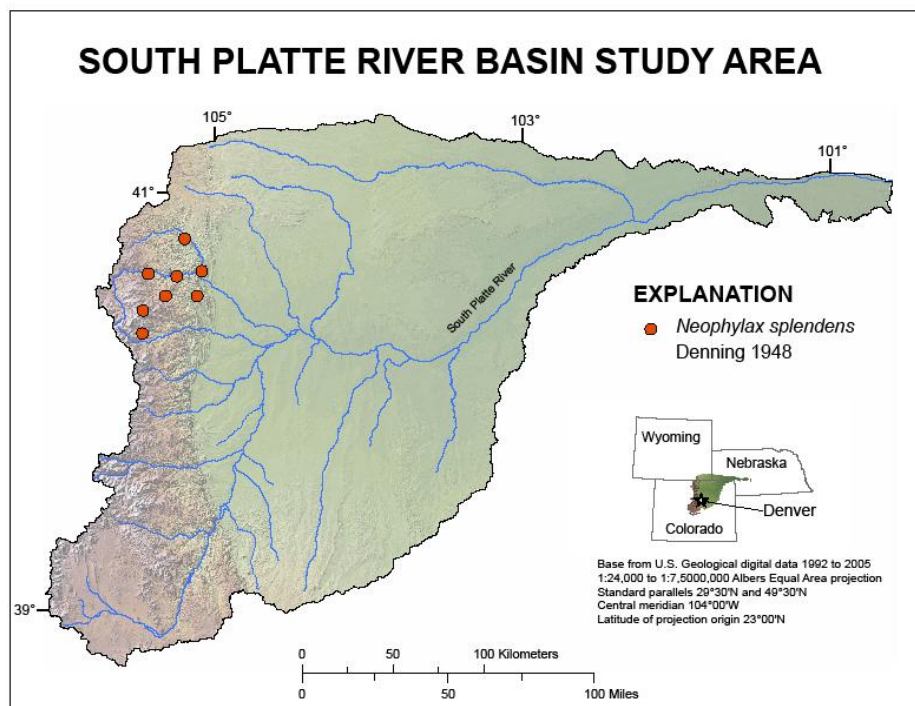
Distribution of *Rhyacophila vao* collections in the South Platte River Basin.



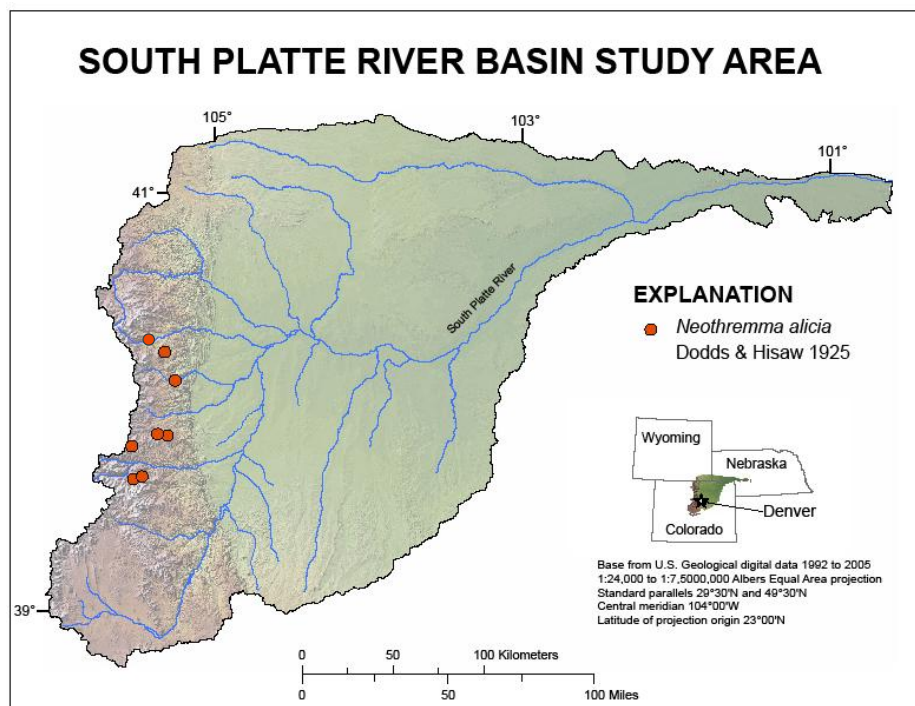
Distribution of *Rhyacophila verrula* collections in the South Platte River Basin.



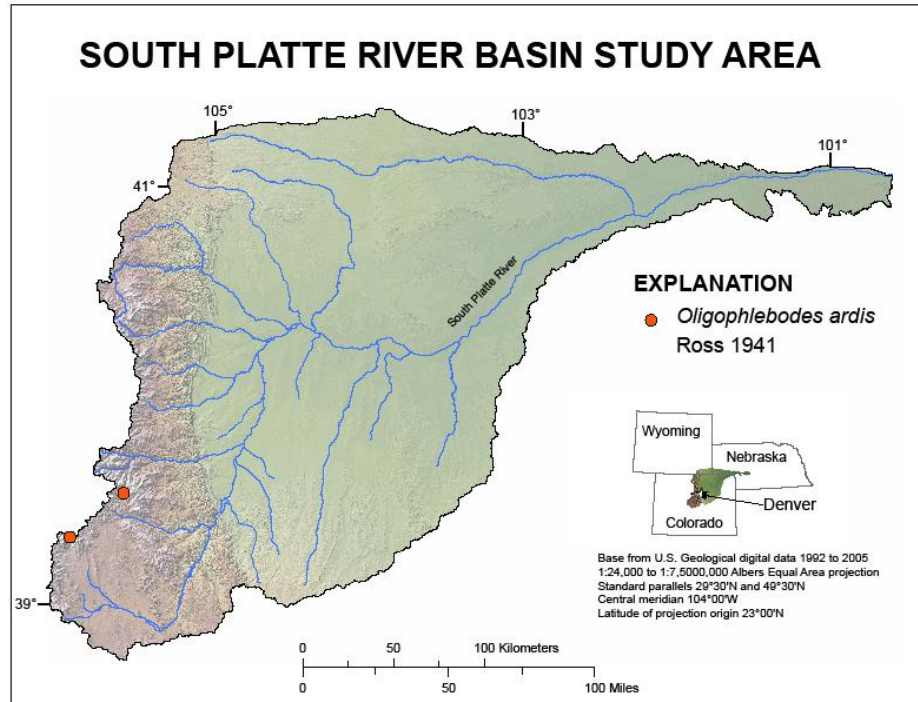
Distribution of *Rhyacophila vofixa* collections in the South Platte River Basin.



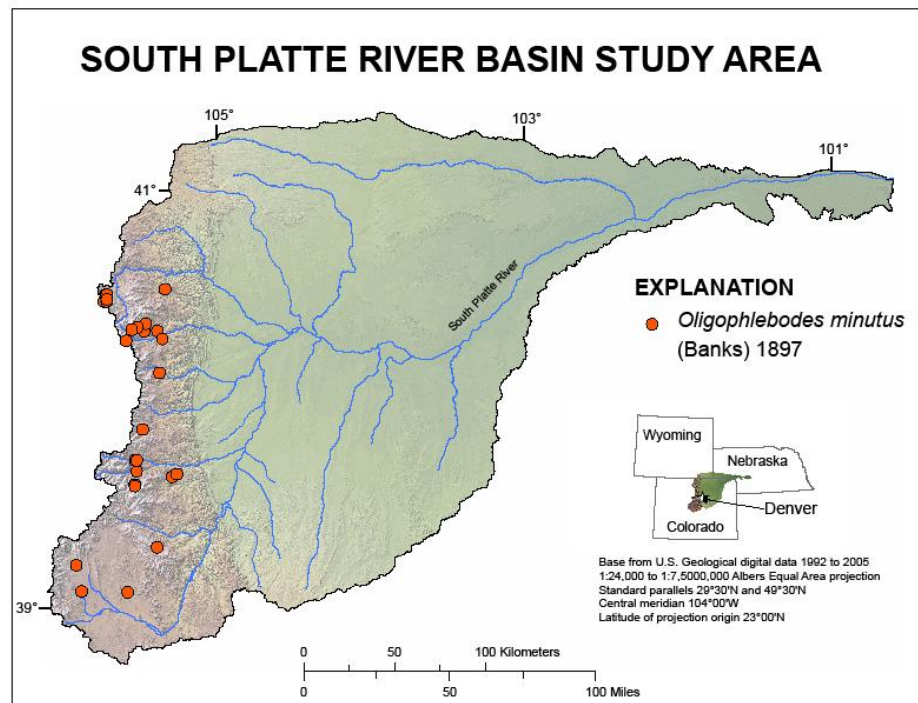
Distribution of *Neophylax splendens* collections in the South Platte River Basin.



Distribution of *Neothremma alicia* collections in the South Platte River Basin.



Distribution of *Oligophlebodes ardis* collections in the South Platte River Basin.



Distribution of *Oligophlebodes minutus* collections in the South Platte River Basin.