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A Flora of Coyote Ridge and Flat, Inyo County, California

By
Martin Purdy

Presented to the Graduate Faculty of
Claremont Graduate University in partial
fulfillment of the requirements for the degree
of Master of Science in Botany.

We certify that we have read this document
and approve it as adequate in scope and
quality for the degree of Master of Science.

Faculty Advisor, J. Travis Columbus, Ph.D.
Claremont Graduate University
Professor of Botany

Faculty Reader, Naomi Fraga, Ph.D.
Claremont Graduate University
Research Assistant Professor of Botany

2022

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Abstract

California's Sierra Nevada mountain range contains a disproportionate share of the state's plant diversity and is one of the most floristically diverse regions of its size in the United States. The high Sierra Nevada, in particular, has been identified as an important center of species richness and endemism within California. Anthropogenic climate warming is expected to disproportionately affect mountain ecosystems, and models have predicted serious habitat contraction and extirpation for many alpine plant taxa. A specimen-based inventory of the vascular and non-vascular plants of Coyote Ridge and Flat was conducted to establish baseline data for one such sensitive alpine and subalpine habitat. Located in the northwest corner of Inyo County, California, the study site encompasses ca. 130 km² (50 mi²) and ranges from 2600 to 4120 m (8500–13,500 ft) in elevation. Coyote Ridge and Flat marks a topographically and geologically unique region of the Sierra Nevada's eastern slope above the northern Owens Valley and has long been known to botanists for harboring populations of rare and disjunct plant taxa. Fieldwork and herbarium searches conducted between July 2019 and August 2021 documented a total of 543 minimum-rank taxa, 273 of which were not previously known to the area. New collections and examination of historical specimens have yielded occurrences of 12 new rare plants for the area including new records for the Sierra Nevada mountains and one new record for the state of California. Background information for the area, the results of this inventory, and an annotated checklist of the flora are presented here.

Introduction

On a global scale, mountainous regions represent hotspots of species richness and endemism that is disproportionate to their extent (Rahbek et al. 2019). This relationship holds true for California's largest mountain range, the Sierra Nevada, which is one of the most floristically diverse areas of its size in North America north of Mexico (Shevock 1995). The impacts of global warming in mountain ecosystems are acute, and many alpine and arctic plants are threatened by habitat contraction, local extirpation, and

extinction (Dullinger et al. 2012, Wershow and DeChaine 2018, Niskanen et al. 2019, Watts et al. 2022). Consequently, the documentation of plant diversity via the collection of herbarium specimens in these diverse and threatened ecosystems is crucial in this era of rapid climatic change.

Collection-based floristic inventories are essential to our understanding of plant diversity and abundance, and innovative new uses of herbarium specimens are constantly being developed (Heberling et al. 2019). Even in relatively well-collected areas like California, our understanding of plant diversity remains incomplete and species new to science continue to be discovered at surprising rates (Ertter 2000, Andre 2014, Taylor 2014). This combined with recent declines in plant collecting and support for herbaria within North America (Prather et al. 2004, Tewksbury et al. 2014) and increased impacts to natural ecosystems from global climate change, increased intensity and size of wildfires, habitat modification and fragmentation, and other human activities highlights the critical need to document and conserve plant diversity on the landscape today.

The area known as Coyote Ridge and Flat (Fig. 1), or the Coyote Warp (Bateman et al. 1965), is an unusual physiographic feature on the east slope of the Sierra Nevada just southwest of Bishop, California, USA. While much of the Sierra Nevada's eastern escarpment in this area rises abruptly from the valley floor to the crest, the Coyote Warp, which lies largely between 3000 and 3700 m (9800–12,200 ft) in elevation, is characterized by low relief. Such extensive flat and high-elevation terrain is rare in the Sierra Nevada, especially east of the crest (Bateman et al. 1965). The geology is also unusually diverse for the Sierra Nevada (Bateman et al 1965, Wenk 2005) and many alpine areas of Coyote Ridge and Flat appear to have escaped extensive Pleistocene glaciation (Bateman et al. 1965, Phillips et al. 2011). These factors, in combination, result in many habitats that are uncommon within the Sierra Nevada range.

The area has long attracted botanical interest because growing here are the only Sierra Nevada populations of *Draba subumbellata* (Brassicaceae) and *Potentilla morefieldii* (Rosaceae), two narrow

endemics otherwise known only from the alpine zone of the White Mountains. A handful of other plants absent or rare in the Sierra Nevada, but more common to the east (e.g., *Eriogonum caespitosum*, *Oxytropis borealis*, *Trifolium andersonii*) are also found on Coyote Ridge and Flat. These disjunct occurrences of primarily Great Basin and White Mountains affiliated plant taxa indicate a floristic affinity between these regions and the Coyote Warp that has yet to be fully explored.

The primary goal of this study was to produce a voucher-based and annotated checklist of the vascular and nonvascular plant diversity present on Coyote Ridge and Flat through the collection of new specimens and an examination of historical herbarium collections. Historical specimens from Coyote Ridge and Flat date back to 1914 but are concentrated in time and space leaving large swaths of the area without recent collections or any botanical documentation at all. The lack of a comprehensive botanical survey and the documented presence of unusual plant species and habitat types makes Coyote Ridge and Flat a compelling setting for a floristic inventory.

Physical Setting

Location and Physical Geography

The area known as Coyote Ridge and Flat lies entirely within the Inyo National Forest (INF) on the east slope of the Sierra Nevada in the northwest corner of Inyo County, California (Fig. 1). Coyote Flat (centrally located within the project boundary) is nearly equidistant from the towns of Bishop, 19 km (12 mi) to the northeast, and Big Pine, 17.6 km (11 mi) to the east-southeast. The study area is ca. 127 km² (49 mi²) and has an elevational range of 1521 m (4990 ft). The lowest elevation of 2601 m (8535 ft) occurs where a tributary of Rawson Creek intersects the study area's northern boundary, and the highest elevation is the summit of Cloudripper at 4122 m (13,525 ft) in the southwest corner of the study area. In general, elevation increases from south to north and east to west. Along the southern boundary, a

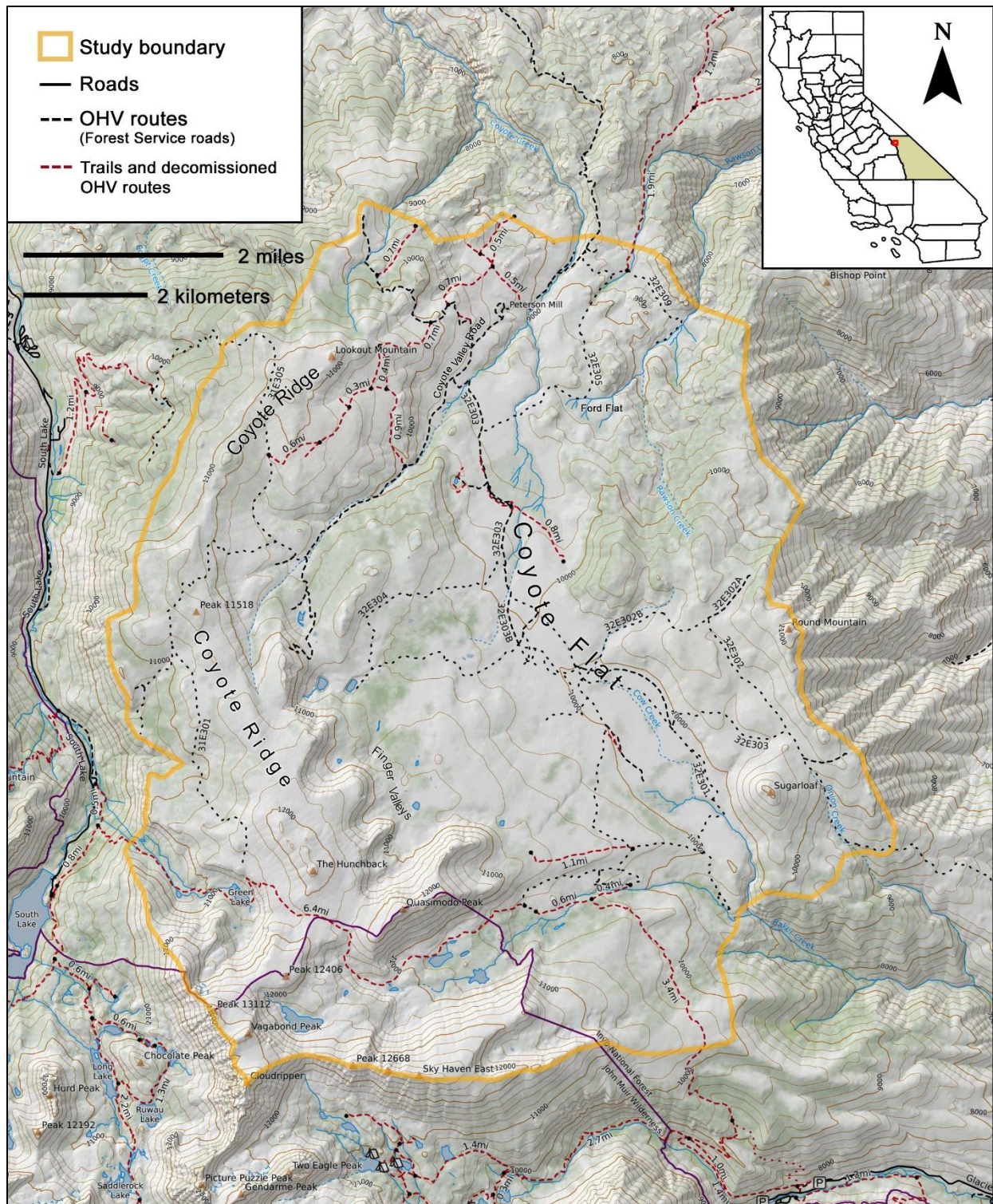


Fig. 1. Map of Coyote Ridge and Flat with the project boundaries and significant landscape features, roads, and trails marked. The base map was generated from CalTopo.com and is reproduced here with permission and some modifications. Base map layer sources: CalTopo and OpenStreetMap contributors.

relatively small portion of the study area (ca. 9%, 11 km²/4.3 mi²) falls within the John Muir Wilderness (Fig. 1). This region contains the highest-elevation terrain (including Cloudripper and Vagabond peaks) and the upper portion of Baker Creek watershed. Five small private inholdings are scattered within the project boundaries (not shown in Fig. 1).

The boundary of the study area was drawn to completely contain the geographic features known as Coyote Ridge and Coyote Flat (Fig. 1). Sometimes referred to as the Coyote Warp, this area has long been recognized as an unusually low-relief and high-elevation portion of the eastern Sierra Nevada slope (Bateman et al. 1965). Coyote Ridge is a gently sloped ridge composed mostly of unglaciated metasedimentary rock (Bateman et al. 1965). It runs more or less north-south for about half its length (ca. 5 km/3.1 mi) from its highest elevation and southern extent at the Hunchback (3752 m/12,311 ft) to its intersection with Forest Service road 31E303. It then curves northeast and extends for another 5 km before terminating near Lookout Mountain at 3432 m (11,261 ft). Coyote Flat is a large sagebrush-dominated plateau centrally located within the study area which ranges from ca. 2700 to 3400 m (8860–11,150 ft) in elevation. Elsewhere in the study area, topography is more extreme with steep talus slopes and ridges common in higher elevation terrain to the southeast (i.e., Baker Creek and Green and Brown lakes basin; Fig. 1). Whenever possible, natural landmarks and geography were used to inform the project boundary (e.g., ridges, peaks, elevation contours), and an attempt was also made to include all areas reasonably accessible by four-wheel drive (4WD) roads once up on Coyote Flat.

Road access to the study area is primarily via Coyote Valley Road, a 4WD road originating in Bishop. Another 4WD road (32E303) provides access from Big Pine to the southeast, but this route has a “most difficult” designation by the Inyo National Forest and receives much less traffic than Coyote Valley Road. The southeast portion of the study area, which includes the Green and Brown lakes valley, the Hunchback, and Cloudripper peak, is most easily accessed by hiking trails starting at South Lake and Parchers Resort. The Baker Creek area in the south can also be accessed by a trail from Big Pine Creek

and Glacier Lodge. Over 70 km (44 mi) of Forest Service-managed 4WD roads network Coyote Flat and adjacent areas, providing road access to many northern and eastern parts of the study area. Road access to such remote and high-elevation terrain along the east slope of the Sierra Nevada is rare, and the area has become increasingly popular to off-road highway (OHV) recreation in recent years (USDA Forest Service 2009, M. Purdy pers. obs.).

The study area has nine named lakes and many unnamed permanent and seasonal bodies of water. Most lakes and ponds occur above 3000 m (9,850 ft) in the southwest portion of the study area, which is generally wetter and higher in elevation (Fig. 1). All creeks originating on Coyote Ridge and Flat ultimately drain east to the Owens River, but six main watersheds are distinct within the study area and used in the locality descriptions of specimens collected for this project. These are the Green and Brown lakes watershed, Coyote Creek watershed, Rawson Creek watershed, Bishop Creek watershed, Onion Creek watershed, and Baker Creek watershed. Countless seeps and springs occur in the area, but they are most common in the Coyote Creek, Rawson Creek, and Onion Creek watersheds.

Geology

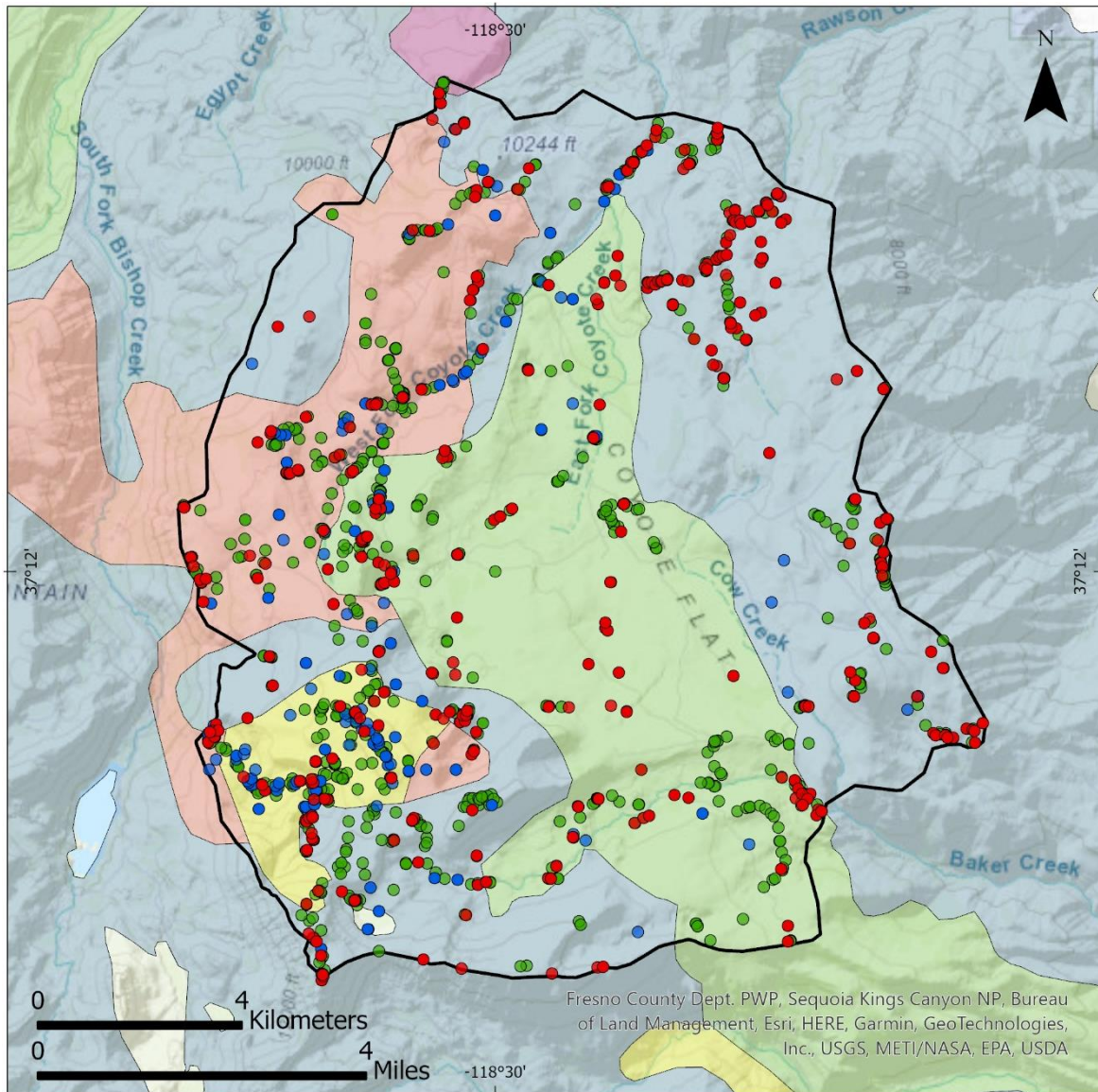
The 640 km-long (400 mi) Sierra Nevada is composed primarily of granitic rocks of Mesozoic age (210–80 million years old). These granitic rocks occur in discreet masses called plutons and are collectively referred to as the Sierra Nevada Batholith (Bateman 1968, Moore 2000). Batholiths of a similar age and origin extend from Baja California to Alaska, spanning 5600 km (3500 mi) of the west coast of North America (Moore 2000). The Sierra Nevada is essentially a large fault-block range that has been tilted westward, resulting in a gentle western slope and a steep eastern escarpment. The extreme relief along its eastern boundary in Owens Valley, as much as 3050 m (10,000 ft) (e.g., near Lone Pine and Bishop), is attributed to a combination of uplift along faults east of the Sierra Nevada block and subsidence of the Owens Valley block (Bateman et al. 1965). Relative to other major North American mountain ranges (i.e.,

the Rockies and the Appalachians), the Sierra Nevada is considered young because most of its uplift has occurred within the last 10 million years and is still occurring to this day (Bateman 1968, Hill 1975).

Although far less common than granitic rocks, scattered patches of older metamorphic rocks are found throughout the Sierra Nevada. These metamorphic rocks were once more widespread, but in most places they have eroded away leaving only small remnant outcrops (Bateman 1968, Moore 2000). This is particularly true of the eastern Sierra Nevada where remnant island-like patches of metamorphic rocks, called roof pendants, are scattered along the crest from Big Pine to Mono Lake (Stevens and Green 1999, Moore 2000). In this region, these metamorphic outcrops are principally composed of Paleozoic marine sediments which were deposited off the west coast of North America over 400 million years (Ma) ago. Over millions of years of geologic activity, these marine sediments, consisting primarily of shale, sandstone, and limestone, were converted through heat and pressure into the metasedimentary (metamorphosed sedimentary) rocks of schist, quartzite, and marble, respectively (Bateman et al. 1965, Moore 2000). The Coyote Ridge and Flat area is notable for containing a large remnant patch of metasedimentary rocks known as the Bishop Creek Roof Pendant (Fig. 2; Bateman et al. 1965).

The rock types present within the study area can be divided into five main categories, listed here in order of decreasing age: 1) Paleozoic metasedimentary rocks of the Bishop Creek Roof Pendant (> 400 Ma), 2) Mesozoic diorite and gabbro (145–80 Ma), 3) Mesozoic granitic rocks (145–80 Ma), 4) late Cenozoic volcanic flows (12–11 Ma), and 5) Quaternary glacial deposits (< 2.6 Ma) (Bateman et al. 1965, Bateman and U.S. Geological Survey 1992, Phillips et al. 2011). The most thorough discussion of this region's geology, including detailed maps, appears in Bateman et al. (1965).

Within the study area, metasedimentary rocks of the Bishop Creek Roof Pendant are most pronounced in the northern and eastern portions of Coyote Ridge and along upper portions of the West Fork of Coyote Creek (Fig. 2). Smaller outcrops are also common in and around the Hunchback and in the small glacial



Major rock types

- Paleozoic metasedimentary rocks
- Mesozoic diorite and gabbro
- Mesozoic granitic rocks
- Cenozoic volcanic flows
- Quaternary glacial deposits

- Purdy collections
- Historical collections
- iNaturalist observations
- Study boundary



Fig. 2. Map of the study area with plant collections (contemporary and historical), iNaturalist observations, and the main distributions of major rock types shown. A total of 1087 iNaturalist observations are shown on the map, 999 (92%) of which were created by me (910) or field assistants (89) for this project. Not all outcrops of rocks discussed in the Geology Section are mapped here. For more detailed geologic maps of the region see Bateman et al. (1965), Elliot and McKee (1982), and Bateman and U.S. Geological Survey (1992).

cirques, hereafter referred to as the Finger Valleys (Fig. 1), to the east. Metasedimentary rocks present on Coyote Ridge and Flat include pelitic hornfels, calc-hornfels, metachert, micaceous quartzite, and marble (Bateman et al. 1965). Where these metasedimentary rocks occur (marble and other calcareous rocks in particular) they tend to host unique assemblages of calciphilic plants species not found on other substrates.

Rocks classified as Mesozoic diorite and gabbro are limited in distribution and occur mainly in the southwest part of the study area that includes the Hunchback and the Green and Brown lakes basin. They are often, although not always, associated with outcrops of metasedimentary rocks. This is a highly variable category of non-granitic intrusive igneous rocks that are typically darker in color and thought to be older than the more abundant Mesozoic granitic rocks (Bateman et al. 1965, Bateman 1992).

Unsurprisingly, Mesozoic granitic rocks, which form the vast majority of the Sierra Nevada Batholith, are also the most abundant rock type within the study area (Bateman et al. 1965, Moore 2000). Almost the entire eastern third of the study area consists of granitic rocks and there are large extents elsewhere, particularly along the southern boundary. Types of granitic rocks present within the study area include granodiorite, quartz monzodiorite, biotite granite, and true granite (Bateman et al. 1965, Bateman 1992).

Volcanic rocks from late Cenozoic basalt flows occur within the study area in two locations: just inside the northern boundary on the north slope of Coyote Ridge (near Little Egypt Prospect; Fig. 2) and in several small outcrops east of Coyote Flat (these not shown in Fig. 2). These volcanic flows were initially thought to have originated during the Pleistocene (< 2.6 Ma; Bateman et al. 1965) but were later dated by Phillips et al. (2011) at ca. 12 Ma.

Finally, Quaternary glacial deposits make up the youngest and second most abundant rock type present within the study area. This is a broad category encompassing the diversity of geological formations left

behind by Pleistocene glaciation and modern erosion within the past 2.6 Ma. Glacial deposits are best represented in the study area by the large expanses of glacial till present in Coyote Flat and bordering major drainages like Rawson Creek. Much of the terrain between Coyote Flat and Coyote Ridge and most alpine talus slopes are also mapped as this category (Bateman et al. 1965).

Glaciation

Except for its southern 100 km (62 mi), nearly all of the Sierra Nevada was heavily glaciated during the Pleistocene epoch (2.6 Ma to 12,000 years ago) covering roughly one-third of the range in ice (Moore and Moring 2013). Repeated cycles of glaciation have left their mark on the landscape in the form of U-shaped valleys, alpine lake basins, and glacial moraines and cirques (Moore 2000). In many places, it is impossible to know exactly how many cycles of glaciation occurred because each new period of glacial advance effectively wiped the slate clean up to its maximum extent, in a process known as “obliterative overlap” (Gibbons et al. 1984, Phillips et al 2009). Therefore, only the most recent and most extensive glacial stages have been preserved to this day.

The eastern slope of the Sierra Nevada around Coyote Ridge and Flat was not spared from the transformative effects of glaciation, and large trunk glaciers were present in the drainages on either side of the study area, Bishop Creek and Big Pine Creek. The glaciers of Bishop Creek extended down to 1500 m (5000 ft), which is among the lowest the region (Phillips et al. 2009). Evidence of glaciation also exists within the study area, which is approximated by the mapped area of Quaternary glacial deposits shown in Fig. 2.

The major drainages of Rawson Creek, the West Fork of Coyote Creek, and Green and Brown lakes basin all likely experienced glaciation, which is indicated by the broad U-shape of their upper valleys. The Finger Valleys east of the Hunchback were also glaciated based on the glacial till and moraines which

begin there and extend downslope into Coyote Flat (Bateman et al. 1965). What is remarkable, however, is that much of the gently sloping plateaus and ridges of Coyote Ridge and surrounding areas, which extend well above the lower extent of glaciers in this region (Phillips et al. 2009), appear to have escaped the major effects of glaciation. This is evidenced by the gentle alpine topography and the presence of easily eroded yet relatively undisturbed basalt flows on Coyote Flat dating to 12 Ma (Phillips et al. 2011). The unusual position of Coyote Ridge and Flat, extended northeast into the Owens Valley and away from the Sierra Nevada crest is likely to blame for this, as snowfall decreases steeply with distance east of the crest with corresponding increases in temperature and solar radiation making conditions for ice accumulation unfavorable (Fred Phillips, pers. comm.).

Climate

No long-term climate data exist for the study area itself, but 14 weather stations are located within a ca. 13 km (8 mi) radius of Coyote Flat (CDEC 2022). Unfortunately, the types of climate data collected and years of coverage are not consistent among stations which makes comparisons between stations and characterization of the study area challenging. Also, the type of precipitation data recorded, typically snow depth during spring months, is not easily converted into total annual precipitation values. For these reasons, I use PRISM (Parameter-elevation Regressions on Independent Slopes Model) climate data to estimate average annual and monthly precipitation and temperatures for the study area (PRISM 2022, Figs. 3 and 4). PRISM climate datasets use weather station data and digital elevation models (DEMs) to model precipitation, temperature, and other climate elements (e.g., dew point, vapor pressure deficit) across landscapes (PRISM 2022). The high density of weather stations in this area should therefore inform robust PRISM climate predictions. PRISM 30-Year Normals are the annual and monthly averages of these values over a 30-year period. The most recent set of Normals, covering the period from 1991–2020, are used to estimate precipitation and temperature data for the study area (Figs 3 and 4).

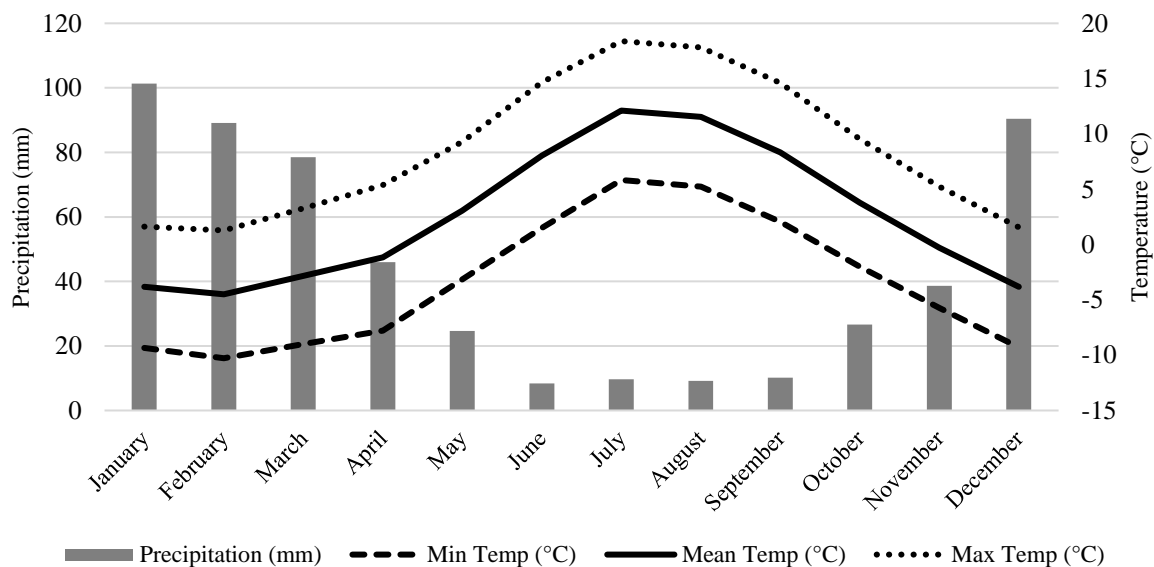


Fig. 3. PRISM monthly 30-Year Normals (1991–2020 averages) including precipitation and minimum, mean, and maximum temperatures estimated for a 4 km grid square centered within the study area. Total annual precipitation for this grid is estimated at 533 mm/yr. (20.98 inches/yr.). Lat/long: 37.2189, -118.4987; elevation: 3161 m / 10,371 ft (PRISM 2022).

Coyote Ridge and Flat experiences a local climate like many other areas on the eastern slope of the Sierra Nevada. Typical of the Mediterranean climate of most of California, the region has warm dry summers and cold wet winters (Powell and Klieforth 2000). Prevailing winds are from the west to southwest and most precipitation falls as snow during the winter months with summer thunderstorms contributing a lesser amount (Fig. 3; Powell and Klieforth 2000, PRISM 2022). It is this scarcity of summer rainfall, unusual for mountain ranges in western North America, that has been hypothesized as one of the main reasons for the high levels of plant endemism observed in the Sierra Nevada range (Rundell 2011). PRISM 30-Year Normals (1991–2020) estimate a steep annual precipitation gradient within the study area ranging from 305 to 1067 mm/yr. (12–42 in/yr.), increasing with elevation from the northeast to the southwest (Fig. 4), and average monthly temperatures ranging from a low of -4.5°C (23.9 °F) in February to a high of 12.1 °C (53.8 °F) in July (Fig. 3).

As discussed in other sections above, the Coyote Warp is atypical of the eastern Sierra Nevada slope in that it contains a relatively large amount of high-elevation terrain that is discontinuous with and east of the Sierra Nevada crest. As such, it lies entirely within the rain shadow of the Sierra Nevada and, unlike

adjacent watersheds to the south and west, no creeks in the study area have their headwaters originating at the crest making them small and drier by comparison. Additionally, the portion of the Sierra Nevada crest immediately south and west of Coyote Ridge and Flat (the same direction as the prevailing winds and moisture bearing storms) is one of the highest and most prominent within the range with elevations continuously above 3350 m/11,000 ft (Hill 2000). As a consequence, it is expected that the alpine and subalpine plateaus of Coyote Ridge and Flat would be drier than areas of equivalent elevation closer to the crest. This hypothesis is consistent with PRISM annual precipitation data modeled for the area (Fig. 4).

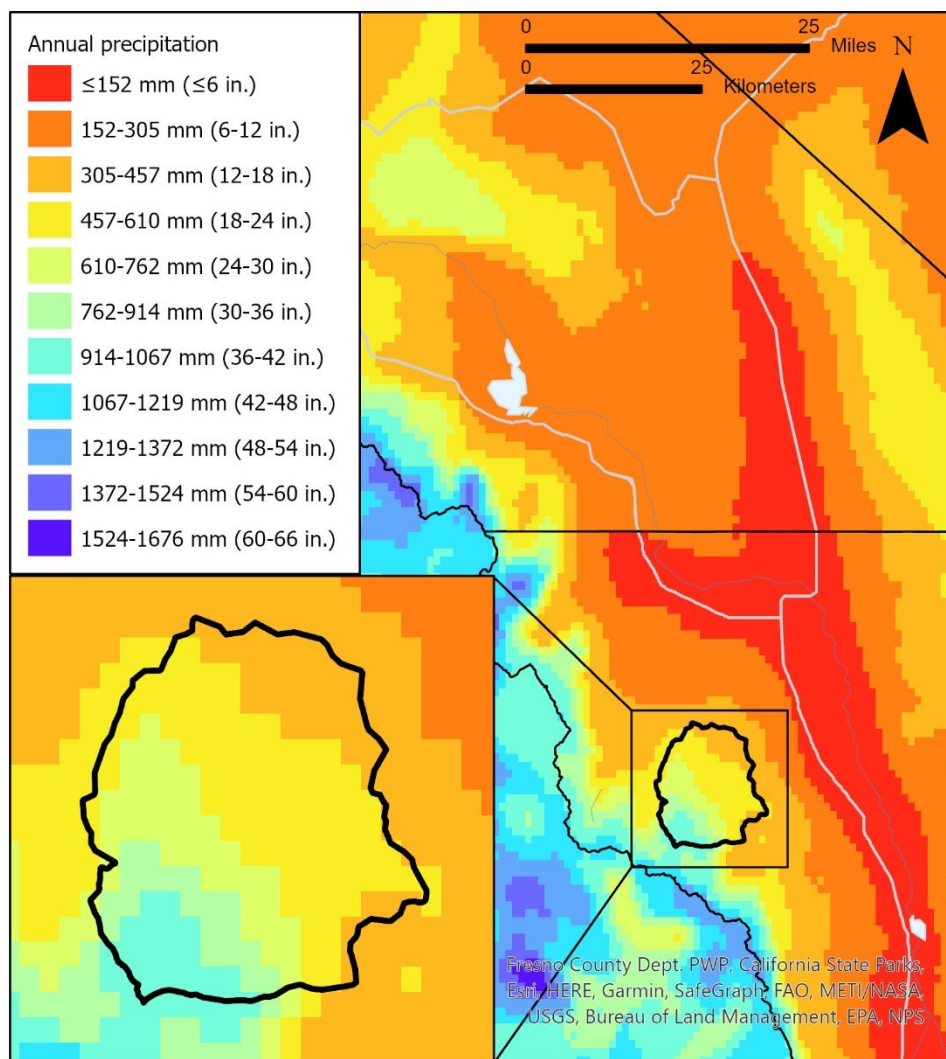


Fig. 4. PRISM 30-Year Normals (1991–2020) annual precipitation mapped for the study area (enlarged in lower left) and the surrounding region. The rain shadow cast by the Sierra Nevada is evidenced by the steep decrease in annual precipitation moving east from the crest.

Interannual variation in precipitation in the eastern Sierra Nevada region can be great (Powell and Klieforth 2000), which was true of the three years of fieldwork conducted for this study. Several nearby weather stations have consistent snow depth and snow water content records for April 1 dating back to 1938 which allows for the comparison of snow accumulation in recent years to long-term historical trends. Long-term averages (1938–2021) and recent (2019–2021) snow water content measurements from two nearby weather stations, Big Pine Creek 2 (BP2) and Sawmill (SWM), are provided in Table 1. These data indicate that snowfall ranged from 172 to 206% of long-term averages in 2019, compared to 35–50% in 2020 and 2021 (Table 1; CDEC 2022). The dramatic effects of this were seen on the landscape with some lakes observed at their high-water marks in 2019 which were completely dry in August 2021 and huge wildflower blooms in 2019 that were not observed again in 2020 or 2021.

Table 1. Snow water content measured on April 1 from two weather stations adjacent the study area between 1938 and 2021. Standard deviations of the 1938–2021 averages (last column) are given in parentheses. Big Pine 2 (BP2; lat/long: 37.127, -118.470) is located on the North Fork of Big Pine Creek ca. 1.5 km south of the southern study boundary, and Sawmill (SWM; lat/long: 37.162, -118.563) is located above South Lake just west-southwest of the Green and Brown lakes basin within the study area (CDEC 2022).

Station ID (elevation)	2019 (% of mean)	2020 (% of mean)	2021 (% of mean)	1938–2021 mean
BP2 (2957 m / 9,700 ft)	737 mm (206%)	140 mm (39%)	127 mm (35%)	358 (\pm 250) mm
SWM (3109 m / 10,200 ft)	826 mm (172%)	241 mm (50%)	229 mm (47%)	479 (\pm 253) mm

Botanical Setting and Floristic Provinces

Located on the east slope of the Sierra Nevada, Coyote Ridge and Flat occur near the transition of two major floristic provinces—the California Floristic Province (represented by the Sierra Nevada) and the Great Basin Province (represented by the Owens Valley). As mapped in *The Jepson Manual, Second Edition* (Baldwin et al. 2012), the study area lies within the northeast corner of the southern High Sierra Nevada district (sSNH), which extends as a spur (known as the Coyote Warp) several miles northeast

towards the northern Owens Valley (Bateman et al. 1965, Wenk 2005). This northeast extension of the Sierra Nevada mountains narrows the valley here reducing the distance between alpine and subalpine habitats of the White and Inyo mountains and those present on Coyote Ridge and Flat. Applying the theory of island biogeography (MacArthur and Wilson 1967) leads to the prediction that these two montane sky-islands, being closer together, will share a higher rate of colonization than with other more distant “island” habitats, and indeed this appears to be the pattern. Several locally endemic plant species known from the White and Inyo mountains have their only California Floristic Province occurrences within the study. Some of these were known before this project (e.g., *Draba subumbellata*, *Oxytropis borealis* var. *viscida*, *Potentilla morefieldii*) whereas others (e.g., *Angelica kingii*, *Hackelia brevicula*) were documented during this study and are addressed in the Noteworthy Collections section below.

Human Impacts

Owens Valley Paiute

The study area lies within the ancestral homeland of the Owens Valley Paiute (Liljeblad and Fowler 1986, Anderson and Moratto 2000) who remain permanent residents of the Owens Valley today mainly as members of the Bishop Paiute Tribe, Big Pine Paiute Tribe, Fort Independence Reservation, and the Lone Pine Paiute Shoshone Tribe. Archaeological sites in the Owens Valley suggests people may have first settled the area around 3500 BCE (before common era) or earlier, but that the Numic-speaking peoples who later became known as the Owens Valley Paiute arrived ca. 600–1000 CE (common era) (Liljeblad and Fowler 1986). Before contact with Europeans, Owens Valley may have been one of the most densely settled regions of the Great Basin with a population of 1000–2000 people living in ca. 30 permanent to semi-permanent settlements, with at least one population center located around Bishop Creek (Lawton et al. 1976). There is clear evidence that the valley landscape was extensively managed for the cultivation of wild seed and root crops through a complex system of irrigation ditches and dams (Lawton et al. 1976,

Liljeblad and Fowler 1986). Pine nuts harvested from pinyon pines (*Pinus monophylla*) in the White and Inyo mountains and the east slope of the Sierra Nevada were another important food source for the Paiute. Trade with groups west of the Sierra Nevada crest is also known to have occurred with the exchange of people, food, and cultural goods over mountain passes each summer (Liljeblad and Fowler 1986).

No pre-European archaeological sites were discovered during fieldwork or research for this project. Due to its relatively high elevation, which is not along a mountain pass route, use of the Coyote Ridge and Flat area by the Owens Valley Paiute may have been limited, but this is only speculation. Pinyon pine woodlands, which are rare within the study area but extensive on lower-elevation slopes of the Coyote Warp, probably would have been visited for the harvesting of pine nuts. Also, the extensive wet meadows present on Coyote Flat may have represented an attractive place for hunting or the harvest of wild crop species.

Grazing

A broad overview of the history of grazing by domesticated animals in the Sierra Nevada is well summarized by Beesley (1996). Nearly all parts of the Sierra Nevada were exposed to destructive and unregulated sheep grazing in the late 19th century. As most of the land came under federal ownership and regulation in the early 1900s, special-use grazing permits were established which favored cattle grazing by local ranchers over that of the unregulated herds of sheep (Beesley 1996). The grazing history of Coyote Ridge and Flat dates back to the 1860s when Owens Valley ranchers first drove livestock into the Coyote area for summer grazing (Pearce et al. 2014). The greatest recorded use for the area occurred in 1924 when a reported total of 3058 combined head of sheep and cattle grazed there. The grazing allotments in the area were limited to cattle beginning in 1949, and 878 cattle were recorded on the land that year (Pearce et al. 2014). Numbers have decreased since then and in 2014 the maximum was set at 400 according to Pearce et al. (2014). There are currently three grazing allotments in the Coyote Flat area

totaling ca. 202 km² (78 mi²) and ranging from 2600 to over 3660 m (8500–12,000 ft) in elevation (USDA Forest Service 2019). All allotments are held by the Yribarren Ranch which runs their summer operation on a rest and rotation cycle so that all allotments are not collectively grazed in single year. Historically the area was grazed for nearly six months each year (May/June to October), but now the season lasts ca. 51 days (generally 25 June to 15 August) (Pearce et al. 2014). Several small structures and corals as well as numerous barbed wire fences within the study area are presumably utilized and maintained by the Yribarren Ranch.

Undoubtedly, the past 150 years of grazing has had an impact on the vegetation of Coyote Ridge and Flat. In a 1986 Forest Service report on grazing in the area, which could not be accessed but is quoted in Pearce et al. (2014), the author J.V. Stechman wrote:

From an overview, one could conclude that exploitive overgrazing by sheep and cattle from the 1870s through the mid-1940s of the once-excellent Coyote range simply resulted in depletion for which, in spite of corrected management, nature has not compensated within the time span involved.

An analysis of long-term transect data by Pearce et al. (2014), concluded that over the previous 49 years the range remained in “generally fair condition” and changed little except for an increase in woody species (e.g., *Artemisia spp.*, *Pinus contorta*, *Salix spp.*) in most transects. Potential impacts from cattle grazing include the introduction of non-native species, changes in hydrology, soil compaction, and the direct effects of herbivory on plant populations (McIlroy and Allen-Diaz 2012). In areas exposed to heavy grazing, many of these impacts are visible with effects most pronounced in mesic vegetation and habitats.

Mining

By far the most prospected and valuable mineral found in the Bishop region was tungsten. In this area, tungsten deposits are found exclusively where intrusive granitic rocks and calcareous metamorphic rocks (e.g., marble, calc-hornfels) are in contact. High demand for the mineral through the early to mid-20th century, driven largely by WWI, WWII, and the Korean War, led the development of many tungsten mining operations around Bishop (Bateman 1956). A total of seven inactive tungsten mines and prospects are known from metamorphic outcrops within the study area (Bateman 1956, Bateman et al. 1965). Dates of operation are not known for all, but most appear to have operated between 1940 and the mid-1950s. Some valuable tungsten mines occurred just outside of the project boundary (e.g., the Schober Mine ca. 1.3 km northwest of Coyote Ridge), but as of 1956 none within the study area had turned a profit or looked likely to do so (Bateman 1956). The most conspicuous mining infrastructure still present in the study area, is that associated with the Lindner Prospect, consisting of several small wooden structures south of the old mine shaft. Limited mine tailings can be found at the location of most prospects, but all mining shafts encountered within the area appeared to have been filled in or collapsed. Perhaps the most durable legacy of these mines, are the roads constructed to access them, many of which are maintained by the Forest Service and are still drivable. A local prospector named A. H. (Salty) Peterson, who held several claims within the study area, is attributed with building the first road to Coyote Flat (Bateman 1956) and this route remains the primary road access to the area today.

The Coyote Flat Airstrip

The footprint of what was once the highest-elevation airfield in the United States, is centrally located on Coyote Flat at an elevation of ca. 3050 m (10,000 ft) (lat/long: 37.206, -118.478). What little information that could be found on the airstrip is mostly from two private websites (Graham 2017, Freeman 2022). The airstrip was apparently constructed in 1968 or 1969 by the US Air Force Test Center (Edwards Air Force Base) and was used by the US Air Force and Marine Corps to test the performance of helicopters and light aircraft at high elevations. Some technical reports from these tests can be accessed on the

Defense Technical Information Center website (DITC 2022). The 914 m (3000 ft) paved asphalt runway made its first cartographic appearance as “Landing Strip” on a 1978 USGS topographic map. The airstrip was operational for ca. 30 years before being closed and disappearing from aeronautical charts in 1998. Since then, ownership of the area has been turned over to the Inyo National Forest, the pavement removed, and certain obstacles constructed to discourage people from landing there. However, recent accounts of its use can be found online (Graham 2017, Freeman 2022).

The extensive ground disturbance resulting from the construction and decommissioning of this airstrip remains obvious both from the ground and satellite imagery. Vegetation within the old runway footprint has established surprisingly quickly considering it was excluded by asphalt less than 25 years ago, but it remains sparser and of a different composition than adjacent undisturbed areas. The local hydrology was also significantly impacted by grading in the area, and artificial swales, washes, and other erosion control features remain prominent on the landscape.

Recreation

The Coyote Ridge and Flat area is crisscrossed by an extensive network of Forest Service managed 4WD roads. These rugged dirt roads provide access to many of the old mining prospects, creeks, lakes, and private inholdings present within the study area. The highest elevation of these (Forest Service road 31E301) extends into the alpine fellfields west of the Hunchback reaching an elevation of nearly 3600 m (11,800 ft). Such remote and high-elevation roads are rare on the east slope of the Sierra Nevada, and the area has become increasingly popular to OHV recreation in recent years (USDA Forest Service 2009, Pearce et al. 2014).

On most weekends during the busy summer season (July–August) of the last two years of this project (2020–2021), nearly all desirable and established campsites (e.g., near creeks, lakes, and viewpoints)

within the study area would be occupied. It was not uncommon to see vehicles parked and groups camped on sensitive meadow and riparian vegetation. Vehicle trespass on closed routes and trash left behind in popular camping areas was also commonly observed. Other human recreation in the area includes hiking, backpacking, mountaineering, fishing, and hunting. Cumulatively, the impacts of these five activities are dwarfed by that of OHV use which, along with cattle grazing, represents the biggest modern human impact within the study area.

History of Botanical Collections

Prior to this study 706 herbarium specimens (excluding duplicates) were known from the study area (SEINet 2021, CCH1/2 2022). These collections were made by 28 botanists over 105 years (1914–2019), all of whom are listed in Table 2. The first collections known from the area were made by Frank W. Peirson in 1914. Peirson visited the area several times between then and 1933 making 44 collections in total. Other notable collectors in the area include John Thomas Howell (28 specimens), Peter Raven (96), Mary DeDecker (86), Enid Larson (40), Dean Taylor (90), Lawrence P. Janeway and Barbara Castro (together collecting 89 specimens), and Jim André (198). Previous to this study, Lawrence P. Janeway was the only person to have documented bryophytes in the area making a total of 14 moss collections.

Table 2. History of botanical collections within the study area. Number of specimens represent collection events with duplicates removed. Botanists who collected bryophytes are indicated with an asterisk (*).

Collector	Year(s)	Number of specimens
Frank W. Peirson	1914–1929	44
Victor Duran	1926–1927	4
Mark Kerr	1941	1
Han Leschke	1944	14
John Thomas Howell	1947–1948	28
Peter Raven	1950	96
Harry L. Buckalew	1956, 1958	10
Jean L. Pawek	1958	7
Louis C. Wheeler	1962	10
Mary DeDecker	1962–1977	86

Richard H. Pemble	1968	1
R. K. Gierisch & S. N. Zufelt	1969	2
Saul Frommer	1969	2
Enid A. Larson	1971–1972	40
Dean W. Taylor	1977–1995	90
John F. Emmel	1986, 1994	5
Jack Crowther	1996	1
Lawrence P. Janeway*	2000	62
Barbara Castro	2000	27
Sarah Kimball	2000–2001	11
Paul S. Wilson	2002	6
Rebecca C. Wenk	2007	13
Jim André	2010	198
Tasha La Doux	2010	5
Peter Zika	2012	3
Nick Jensen	2013	62
Steve Matson	2019	5
Martin Purdy* (this project)	2019–2021	1398
Total historical specimens (before this project)		706
Total specimens		2104

Methods and Study Objectives

The primary objective of the study was to produce a voucher-based catalog of the vascular and nonvascular plants present within the study area (Appendix 1). This was accomplished through the collection of new specimens and a review of historical herbarium specimens from the area. A secondary goal of the study was to link collections made for this project with iNaturalist observations (iNaturalist 2022) using quick response (QR) codes on herbarium labels. This was accomplished using methodology outlined by Heberling and Isaac (2018) with some modifications.

Previous to each year's fieldwork, a collection permit was acquired from the Inyo National Forest. Fieldwork was conducted between July 2019 and August 2021, with most collections made during the peak blooming months of June through August in 2020 and 2021. A total of 22 trips were made resulting

in 83 field days and ca. 1400 specimens (Table 2). An effort was made to sample as comprehensively as possible and to collect plants in every vegetation and habitat type present within the area. Unique habitat types (e.g., outcrops of unusual rock types) and areas lacking previous botanical collections were prioritized for exploration. When time and population size allowed, specimens were collected in duplicate or triplicate. Populations too small to support collections were not sampled and in some cases photo vouchers were made instead (i.e., *Purdy 102.5, 956.5, 1067.5, 1326.5*). Collection data recorded for each specimen includes GPS coordinates (decimal degrees), elevation, locality and habitat descriptions, associated species, and specimen notes (e.g., flower color, aroma, population phenology and size). For most collections, an assessment of local abundance was also provided using the following categories: dominant = >50% of vegetation cover; abundant = 25–50%; frequent = 10–25%; occasional 5–10%; rare = <5%. With rare exceptions (i.e., some bryophytes), a full set of specimens made for this project will be accessioned at the California Botanic Garden herbarium (RSA). Duplicate specimens will be distributed to other regional herbaria including the California Academy of Sciences (CAS), University of California, Berkeley (UC), and the Inyo National Forest (INF).

Historical specimens were located by querying the California Consortia of Herbaria Portals 1 and 2 (CCH1/2 2022) and the SEINet data portal (SEINet 2021). A handful of specimens incorrectly georeferenced as occurring within the study area were excluded from the checklist. Specimens at CAS, CHSC, SJSU, RENO, and UC/JEPS were requested on loan, examined, and annotated. Historical specimens present at RSA/POM were also reviewed and annotated. High-priority historical specimens present in other herbaria (i.e., DAV, PASA, SFV, and UCR) were annotated in person, or soon will be, from duplicate specimens or high-resolution digitized photos hosted on CCH1/2 (2022).

Vascular plants were identified using several resources, including the Jepson eFlora (Jepson Flora Project 2022), Flora of North America (FNA 1993+), Intermountain Flora (Cronquist et al. 1972–2012), herbarium specimens, and consultation with other botanists and taxonomic experts. Vascular plant

nomenclature follows the Jepson eFlora (Jepson Flora Project 2022) except for a few genera (i.e., *Castilleja*, *Kalmia*, *Limosella*, and *Ribes*) in which Flora of North America (FNA 1993+) treatments and nomenclature were used instead because they better described the diversity encountered within the study area. With a few exceptions, all bryophyte specimens collected for this project were identified by David Toren from duplicates sent to CAS. One liverwort specimen was determined by David Wagner and a few other specimens could not readily be identified by Toren and are being sent to other taxonomic experts for determination. The 14 historical bryophyte collections known from the area were determined by David Toren or Danial Norris. Moss nomenclature strictly follows FNA volumes 27 and 28 (FNA 1993+) and liverwort nomenclature follows the recent synopsis compiled by Stotler and Crandall-Stotler (2017) for North America. Where bryophyte nomenclature differs from the above sources, synonyms are provided in the annotated checklist at the end of this document (Appendix 1).

Results and Discussion

Vegetation

I chose to follow, with some modifications, Holland and Keil's (1995) *California Vegetation* to classify the vegetation of Coyote Ridge and Flat. This older classification was used over more recent treatments of California's vegetation (i.e., Sawyer et al. 2009) because its coarser scale better described vegetation types encountered in the field. This is particularly true of the highly variable mesic and alpine vegetation types found throughout the study area, which did not easily fit into the alliances described by Sawyer et al. (2009).

Vegetation types included here, but not directly addressed in Holland and Keil (1995), include ASPEN GROVES AND RIPARIAN WOODLAND and a highly variable mesic vegetation category (sensu England 2019), MEADOWS, SEEPS, LAKE AND CREEK MARGINS. Observed elevational ranges

(Fig. 5), notes about presence and abundance within the study area, and associated taxa are described for each type. As relevant, corresponding alliances from *A Manual of California Vegetation* (Sawyer et al. 2009), hereafter abbreviated as MCV, are cited.

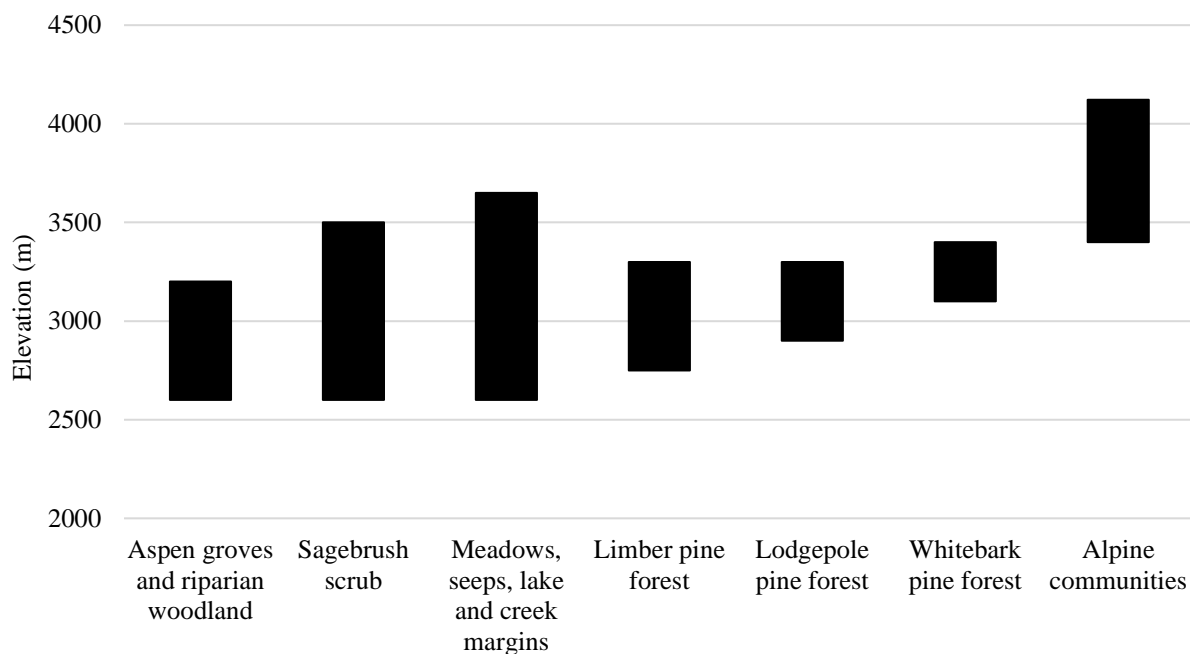


Fig. 5. Elevation ranges of the seven major vegetation types recognized on Coyote Ridge and Flat.

ASPEN GROVES AND RIPARIAN WOODLAND (MCV alliance: *Populus tremuloides* Forest & Woodland); 2600–3200 m (8535–10,500 ft). These two vegetation types are treated here together because they both contain *P. tremuloides* as their dominant overstory component and share many of the same associates. Aspens are common in wet and seasonally wet habitats below 3000 m throughout much of the study area. They form dense yet narrow riparian woodlands along the lower stretches of both Coyote and Onion creeks, rings around wet meadows and springs, and dense sometimes impenetrable groves on seasonally moist north and east-facing slopes. DOMINANT: *Populus tremuloides*. TREES AND SHRUBS: *Artemisia tridentata* subsp. *vaseyana*, *Pinus contorta* subsp. *murrayana*, *Salix* spp., *Symphoricarpos rotundifolius*, *Ribes* spp., *Rosa woodsii* subsp. *gratissima*. HERBACEOUS: *Agrostis*

spp., *Allium bisceptrum*, *Arnica* spp., *Bromus ciliatus*, *Carex* spp., *Equisetum arvense*, *Juncus balticus* subsp. *ater*, *Maianthemum stellatum*, *Symphytotrichum lanceolatum* var. *hesperium*.

SAGEBRUSH SCRUB (MCV alliances: *Artemisia tridentata* subsp. *vaseyana* Shrubland and *Artemisia rothrockii* Shrubland); 2600–3500 m (8535–11,500 ft). Sagebrush scrub is the most abundant vegetation type within the study area, occurring on well-drained flats, slopes, and ridges. It is found from the lowest elevations into alpine zones above treeline and dominates the large plateau of Coyote Flat. Sagebrush scrub is treated broadly here to include plant communities where either *A. tridentata* subsp. *vaseyana* or *A. rothrockii* are dominant or co-dominant. *Artemisia rothrockii* scrub generally occurs at higher elevations and frequently extends into the alpine zone, whereas *A. tridentata* subsp. *vaseyana* scrub is found most commonly below 3000 m (ca. 10,000 ft). However, these two species frequently co-occur, are easily confused in the field, and have many of the same associates and thus are treated here as members of the same vegetation type. DOMINANTS: *Artemisia tridentata* subsp. *vaseyana*, *A. rothrockii*. TREES AND SHRUBS: *Cercocarpus ledifolius* var. *intermontanus*, *Chrysothamnus viscidiflorus* subsp. *viscidiflorus*, *Ericameria* spp., *Pinus monophylla*, *Purshia tridentata*, *Ribes cereum*, *Symphoricarpos rotundifolius*. HERBACEOUS: *Angelica lineariloba*, *Astragalus* spp., *Boechera* spp., *Castilleja applegatei*, *Elymus elymoides*, *Lupinus argenteus*, *Monardella odoratissima*, *Penstemon heterodoxus*, *Silene bernardina*, *Stipa* spp.

MEADOWS, SEEPS, LAKE AND CREEK MARGINS (MCV alliance: none); 2600–3650 m (8535–12,000 ft). Despite having the largest elevational range of any other vegetation type, mesic habitats throughout the study area are relatively stereotypical. They are dominated by a diverse assemblage of *Carex*, *Juncus*, and grass species with a correspondingly diverse set of associated forbs. With the exception of a few moisture-tolerant trees and shrubs (e.g., *Pinus contorta* subsp. *murrayana*, *Populus tremuloides*, *Salix* spp.), the cover of woody species is generally low. Riparian areas with dense woody vegetation, which are rare within the study area, are treated in the aspen groves and riparian woodland

section above. Unsurprisingly, this vegetation type also contains most of the bryophyte diversity known from the area; ca. 70% (48/69) of the documented bryophyte taxa are known from at least one mesic vegetation category. Species assemblage varies greatly at both the macro (elevation, habitat) and micro (aspect, substrate, moisture availability) scales, but some characteristic taxa are found in many mesic habitats across the study area. DOMINANTS: *Carex* spp., *Juncus* spp., Poaceae spp. TREES AND SHRUBS: *Pinus contorta* subsp. *murrayana*, *Populus tremuloides*, *Salix* spp., *Rosa woodsii* subsp. *gratissima*. HERBACEOUS: *Angelica* spp., *Arnica* spp., *Aquilegia formosa*, *Barbarea orthoceras*, *Castilleja miniata* subsp. *miniata*, *Chamerion angustifolium* subsp. *circumvagum*, *Eleocharis* spp., *Epilobium* spp., *Erythranthe* spp., *Gentiana holopetala*, *Hymenoxys hoopesii*, *Lupinus lepidus* var. *confertus*, *L. pratensis* var. *pratensis*, *Montia chamissoi*, *Penstemon rydbergii* var. *oreocharis*, *Polemonium occidentale*, *Potentilla gracilis*, *Platanthera* spp., *Primula* spp., *Stellaria longipes* subsp. *longipes*, *Symphyotrichum* spp.

LIMBER PINE FOREST (MCV alliance: *Pinus flexilis* Woodland); 2750–3300 m (9000–10,800 ft).

Limber pine forest is most pronounced on granitic slopes and ridges below 3000 m (9900 ft). In drier and more exposed areas, these forests have low canopy cover, often include *Cercocarpus ledifolius* var. *intermontanus* as a co-dominant, and intergrade with the surrounding sagebrush scrub. In more sheltered locations, such as north-facing slopes in the Rawson Creek watershed, *P. flexilis* grows in denser and taller stands with few understory species. Occasional *P. flexilis* trees are observed in other vegetation types, most notably sagebrush scrub. DOMINANTS: *Pinus flexilis*, *Cercocarpus ledifolius* var. *intermontanus*. TREES AND SHRUBS: *Artemisia tridentata* subsp. *vaseyana*, *Chrysothamnus viscidiflorus* subsp. *viscidiflorus*, *Pinus albicaulis*, *Symphoricarpos rotundifolius*. HERBACEOUS: *Elymus elymoides*, *Festuca kingii*, *Linanthus pungens*, *Lupinus* spp., *Penstemon rostriflorus*, *Selaginella watsonii*, *Stipa* spp.

LODGEPOLE PINE FOREST (MCV alliance: *Pinus contorta* subsp. *murrayana* Forest & Woodland Alliance); 2900–3300 m (9500–10,800 ft). Lodgepole pine forest can be found bordering lakes, ponds, wet meadows, and depressions throughout much of the study area, with large stands particularly pronounced in the Baker Creek watershed. Pure stands are generally restricted to flat or gently sloped areas that are permanently or seasonally moist, but occasional *P. contorta* subsp. *murrayana* trees are also encountered in sagebrush scrub, limber pine forest, and whitebark pine forest. The associates listed below are those known to occur in and around mostly pure stands of lodgepole pines. DOMINANT: *Pinus contorta* subsp. *murrayana*. TREES AND SHRUBS: *Artemisia tridentata* subsp. *vaseyana*, *Eriogonum umbellatum* var. *nevadense*, *Populus tremuloides*, *Salix* spp., *Symphoricarpos rotundifolius*. HERBACEOUS: *Agrostis* spp., *Arnica parryi*, *Carex* spp., *Descurainia californica*, *Festuca saximontana*, *Lupinus argenteus*, *Muhlenbergia richardsonis*, *Poa* spp., *Stipa* spp.

WHITEBARK PINE FOREST (MCV alliance: *Pinus albicaulis* Forest & Woodland); 3100–3400 m (10,200–11,150 ft). On Coyote Ridge and Flat, subalpine pine forest dominated by *P. albicaulis* begins at around 3100 m and extends to treeline (ca. 3400 m). Whitebark pine forest is common on the rocky slopes of Coyote Ridge and in the Green and Brown lakes valley. Tree density and canopy cover are typically low and understory vegetation is limited. Dwarfed and shrubby (krummholz) patches of *P. albicaulis* can be found up to 3800 m (12,500 ft), but tree-like stands are rare above 3400 m (11,150 ft). At lower elevations and in wet areas, whitebark pine forest can intergrade with both limber pine forest and lodgepole pine forest, blurring the boundaries between these subalpine forest types. DOMINANTS: *Pinus albicaulis*. TREES AND SHRUBS: *Artemisia tridentata* subsp. *vaseyana*, *A. rothrockii*, *Ericameria* spp., *Leptosiphon* spp., *Pinus contorta* subsp. *murrayana*, *P. flexilis*, *Purshia tridentata* var. *tridentata*. HERBACEOUS: *Boechera* spp., *Elymus elymoides*, *Eriogonum* spp., *Eriophyllum lanatum* var. *integrifolium*, *Festuca kingii*, *Linanthus pungens*, *Stipa* spp.

ALPINE COMMUNITIES (MCV alliance: none); 3400–4122 m (11,150–13,525 ft). Although patches of alpine-like vegetation are often found at lower elevations, the alpine zone on Coyote Ridge and Flat can generally be defined as occurring above 3400 m. Above this elevation woody tree species are usually absent and the vegetation is dominated by low-growing herbaceous perennials and small shrubs. As noted above, *Pinus albicaulis* does occasionally extend above this boundary, but generally only in dense, shrubby, and isolated krummholz stands. The vegetation of alpine lakes and seeps is not addressed here, but in the mesic vegetation category above, and no dominants are listed below because no single species or group of species reaches community dominance across the great diversity of alpine habitats and vegetation found on Coyote Ridge and Flat. TREES AND SHRUBS: *Chrysothamnus viscidiflorus* subsp. *viscidiflorus*, *Ericameria discoidea*, *E. suffruticosa*, *Linanthus pungens*, *Pinus albicaulis* (krummholz form), *Ribes cereum*, *Sphaeromeria cana*. HERBACEOUS: *Antennaria* spp., *Aquilegia pubescens*, *Astragalus* spp., *Boechera* spp., *Carex* spp., *Castilleja nana*, *Chaenactis alpigena*, *Draba* spp., *Elymus elymoides*, *Eremogone kingii* var. *glabrescens*, *Eriogonum* spp., *Erigeron* spp., *Festuca* spp., *Hulsea algida*, *Ivesia* spp., *Juncus parryi*, *Koeleria macrantha*, *Lupinus lepidus* var. *ramosus*, *Oreocarya* spp., *Oxyria digyna*, *Oxytropis* spp., *Penstemon davidsonii* var. *davidsonii*, *Phacelia hastata*, *Phlox condensata*, *Poa* spp., *Potentilla* spp., *Raillardella argenteus*, *Rumex paucifolius*, *Selaginella watsonii*, *Silene sargentii*.

Numerical Summary

Fieldwork and herbarium searches yielded a total of 543 minimum-rank taxa (hereafter just taxa) representing 87 families, 252 genera, and 518 species for the study area. Of this total, 474 (87.3%) are vascular plants and 69 (12.7%) are bryophytes. Before this study, 270 taxa were known to occur within the flora boundaries from 706 collections. The ca. 1400 specimens collected for this study documented a total of 516 taxa, 273 of which were not previously known from the area. Many of these additions were not surprising, as they represented taxa which are common in the region and known from areas near

Coyote Ridge and Flat (e.g., Big Pine Creek, Bishop Creek, Rock Creek). Other additions, however, are noteworthy and some of these are highlighted in the Noteworthy Collections section below. Twenty-eight taxa previously documented from the area were not relocated.

To maximize the comparability of my results with other floras, which are generally focused on either vascular plants or bryophytes but not both, summary statistics for each group are discussed separately below.

Vascular flora – A total of 474 minimum-rank vascular plant taxa representing 66 families, 208 genera, and 449 species were documented (Table 3). The five largest plant families are Asteraceae (73 taxa), Poaceae (56), Cyperaceae (35), Brassicaceae (31), and Rosaceae (25). The six largest plant genera are *Carex* (31), *Eriogonum* (13), *Boechera* (12), *Stipa* (11), *Erigeron* (10), and *Potentilla* (10). *Lupinus* and *Poa* follow closely behind with nine documented taxa each. An analysis of lifeforms reveals that perennial species (including herbs and graminoids) dominate the flora with 360 taxa (75.9%). The next largest group is annuals with 53 taxa (11.2%) followed by shrubs (including subshrubs) with 41 taxa (8.6%). Biennials, aquatics, and trees make up the remaining 4.2% of the vascular flora and are represented by 20 taxa.

Table 3. Numerical summary of the flora of Coyote Ridge and Flat, with a focus on vascular plants. When taxonomic rank is not indicated, count is for minimum-rank taxa in each category.

Category	Count (Count within vascular flora)	% of flora (% of vascular flora)
Flora		
Families	87 (66)	
Genera	252 (208)	
Species	518 (449)	
Minimum-rank taxa ¹	543 (474)	
Vascular plants	474	87.3
Bryophytes	69	12.7
Native	531 (462)	97.8 (97.5)
Non-native	12 (12)	2.2 (2.5)
Rare ²	26 (26)	4.8 (5.5)

Five Largest Families		
Asteraceae	73	13.4 (15.4)
Poaceae	56	10.3 (11.8)
Cyperaceae	35	6.4 (7.4)
Brassicaceae	31	5.7 (6.5)
Fabaceae	25	4.6 (5.3)
Six Largest Genera		
<i>Carex</i>	31	5.7 (6.5)
<i>Eriogonum</i>	13	2.4 (2.7)
<i>Boechera</i>	12	2.2 (2.5)
<i>Stipa</i>	11	2.0 (2.3)
<i>Erigeron</i>	10	1.8 (2.1)
<i>Potentilla</i>	10	1.8 (2.1)
Lifeform ³		
Perennial	360	(75.9)
Annual	53	(11.2)
Shrub (or subshrub)	41	(8.6)
Tree	10	(2.1)
Aquatic	7	(1.5)
Biennial	3	(0.6)

¹Excludes four unnamed hybrids listed in the annotated checklist below (Appendix 1).

²As ranked by CNPS (2022a) and NatureServe (2022).

³Excludes bryophytes and sums to 100%. Each minimum-rank taxon has been assigned to a single lifeform category based on descriptions in the Jepson Flora Project (2022) and personal field observations.

Bryoflora – A total of 69 bryophyte species (no infraspecific taxa) in 22 families and 44 genera were documented (Table 4). These are represented by 255 collections, 241 gathered for this study and 14 made by Lawrence P. Janeway in 2000. Mosses make up 95.7% of the bryoflora with 66 species. Liverworts constitute only three species (4.3%), and no hornworts were found. The five largest bryophyte families are Bryaceae (10 species), Pottiaceae (8), Brachytheciaceae (7), Amblystegiaceae (7), and Mielichhoferiaceae (5). The six largest bryophyte genera are *Ptychostomum* (6), *Pohlia* (5), *Syntrichia* (4), *Brachytheciastrum* (3), *Grimmia* (3), and *Philonotis* (3).

Table 4. Numerical summary of the bryoflora of Coyote Ridge and Flat. When taxonomic rank is not indicated, count is for species in each category.

Category	Count	% of bryoflora
Flora		
Families	21	
Genera	44	
Species	69	
Minimum-rank taxa	69	
Mosses	66	95.7
Liverworts	3	4.3

Native	69	100
Non-native	0	0
Rare ¹	0	0
Five Largest Families		
Bryaceae	10	14.5
Pottiaceae	8	11.6
Brachytheciaceae	7	10.1
Amblystegiaceae	7	10.1
Mielichhoferiaceae	5	7.2
Six Largest Genera		
<i>Ptychostomum</i>	6	8.7
<i>Pohlia</i>	5	7.2
<i>Syntrichia</i>	4	5.8
<i>Brachytheciastrum</i>	3	4.3
<i>Grimmia</i>	3	4.3
<i>Philonotis</i>	3	4.3

¹As ranked by CNPS (2022a) and NatureServe (2022). Several documented bryophyte species have extremely limited distributions in California but none have an official conservation status or rare plant rank within the state.

Non-native taxa

A total of 12 non-native vascular plant taxa, accounting for 2.2% of the flora, were documented within the study area (Table 5). All bryophytes documented are considered native species. On Coyote Ridge and Flat non-native species are most common in disturbed areas below 3000 m (9850 ft), mainly along roads and in heavily grazed meadows and riparian areas. Cars and cattle (historically sheep may have also played a role) appear to be the main vectors for introducing new plants into the area, both native and non-native, and some taxa appear to occur mainly as waifs in these lower-elevation disturbed habitats (e.g., non-native *Hornungia procumbens* and native *Camissonia pusilla* and *Monolepis nuttalliana*). The most non-native taxa are found along lower Coyote Valley Road (Fig. 1), which is the most heavily trafficked 4WD route within the study area.

Of the 12 documented non-native taxa, three have a Cal-IPC (2022) rating and seven are on the Inyo National Forest's invasive plant species list (Blake Engelhardt, pers. comm.; Table 5). The non-native species that is the most abundant and has the greatest potential to spread is *Bromus tectorum* (cheat grass). Currently, *B. tectorum* is restricted to disturbed road margins and adjacent sagebrush scrub along Coyote

Valley Road and Forest Service road 32E303 near Onion Creek. These are the only roads into and out of the study area, and although the road near Onion Creek sees less vehicle traffic than Coyote Valley Road, it probably represents the main route for driving cattle up and down for summer grazing (M. Purdy, pers. obs.). All other non-native taxa have very limited distributions or occur sporadically in such low abundance that they appear unlikely to become invasive or spread rapidly in the near future.

Table 5. Non-native taxa documented within Coyote Ridge and Flat. California Invasive Plant Council (Cal-IPC 2022) ratings are given when available, and taxa considered invasive and managed by the Inyo National Forest (Blake Engelhardt, pers. comm.) are indicated with an asterisk (*).

Family	Taxon	Cal-IPC
Asteraceae	<i>Taraxacum officinale</i> *	
Asteraceae	<i>Tragopogon dubius</i> *	
Brassicaceae	<i>Descurainia sofia</i> *	Limited
Brassicaceae	<i>Hornungia procumbens</i>	
Chenopodiaceae	<i>Chenopodium album</i>	
Fabaceae	<i>Trifolium pratense</i>	
Fabaceae	<i>Trifolium repens</i> *	
Poaceae	<i>Agrostis gigantea</i>	
Poaceae	<i>Bromus tectorum</i> *	High
Poaceae	<i>Poa pratensis</i> subsp. <i>pratensis</i>	Limited
Polygonaceae	<i>Polygonum aviculare</i> subsp. <i>aviculare</i> *	
Polygonaceae	<i>Polygonum aviculare</i> subsp. <i>depressum</i> *	

Rare Taxa

Twenty-six rare plant taxa (4.8% of the flora), as ranked by CNPS (2022a) and NatureServe (2022), were documented within the study area. All species have a CNPS rare plant rank and a NatureServe rank. No bryophytes documented within the study area have rare plant rankings at the state level, even though some have extremely limited distributions within California and the United States. Two of these are addressed in the Noteworthy Collections section below. A single species, *Lupinus padre-crowleyi*, is listed as Rare (SR) by the California Department of Fish and Wildlife (CNDDDB 2022) and an additional nine taxa are designated as Species of Conservation Concern (SCC) by the Inyo National Forest (USDA Forest Service 2019). All rare plants and their corresponding CNPS, NatureServe, and Inyo National Forest conservation ranks are provided in Table 6.

Fieldwork conducted for this study and examination of historical specimens added 12 rare taxa not previously known to the flora. Three of these, *Carex idahoensis*, *Hackelia brevicula* and *Townsendia leptotes*, were collected prior to the study but misidentified. Two additional species, *Botrychium crenulatum* and *Penstemon papillatus*, were previously known from and mapped within the area by the Inyo National Forest (Blake Engelhardt, pers. comm.) but lacked voucher specimens. Three rare taxa known from historical collections were not recollected during the study (indicated with diamonds [♦] in Table 6). Two of the species, *Festuca minutiflora* and *Minuartia stricta*, were specifically surveyed for but not relocated during the study. The third, *Townsendia leptotes*, was not searched for because it was discovered from a misidentified historical specimen after fieldwork concluded. This specimen is further discussed in the Noteworthy Collections section below. All three species are known only from single collections in alpine habitats over 45 years ago. As such, it is possible they have been locally extirpated due to climate change, but further surveys are necessary to assert this with confidence.

Table 6. Rare plants documented within Coyote Ridge and Flat as ranked by CNPS (2022a), NatureServe (2022), and the USDA Forest Service (2019). Taxa known only from historical collections and not encountered during this study are indicated with a diamond (♦).

Taxon	CNPS rare plant rank ¹	NatureServe Rank ²	INF Status ³
Ferns			
<i>Botrychium crenulatum</i>	2B.2	S3/G4	SCC
<i>Botrychium ascendens</i>	2B.3	S2/G3	SCC
Monocots			
<i>Carex idahoensis</i>	2B.3	S1/G3	SCC
<i>Festuca minutiflora</i> ♦	2B.3	S2/G5	
<i>Stipa divaricata</i>	2B.3	S2/G5	SCC
<i>Carex congdonii</i>	4.3	S4/G4	
<i>Carex tahoensis</i>	4.3	S4/G5	
Eudicots			
<i>Lupinus padre-crowleyi</i>	1B.2	S2/G2	SCC
<i>Viola pinetorum</i> subsp. <i>grisea</i>	1B.2	S3/G4	
<i>Potentilla morefieldii</i>	1B.3	S2/G2	SCC
<i>Trifolium kingii</i> subsp. <i>dedeckeriae</i>	1B.3	S2/G2	SCC
<i>Townsendia leptotes</i> ♦	2B.3	S2/G4	SCC
<i>Draba praealta</i>	2B.3	S3/G5	
<i>Minuartia stricta</i> ♦	2B.3	S3/G5	

<i>Hackelia brevicula</i>	3.3	S3/G3	SCC
<i>Angelica kingii</i>	4.2	S3/G4	
<i>Utricularia minor</i>	4.2	S3/G5	
<i>Antennaria pulchella</i>	4.3	S4/G4	
<i>Boechera pygmaea</i>	4.3	S3/G3	
<i>Draba subumbellata</i>	4.3	S4/G4	
<i>Jamesia americana</i> var. <i>rosea</i>	4.3	S4/G5	SCC
<i>Lomatium rigidum</i>	4.3	S3/G3	
<i>Oxytropis parryi</i>	4.3	S3/G5	
<i>Penstemon papillatus</i>	4.3	S3/G3	
<i>Thalictrum alpinum</i>	4.3	S3/G5	
<i>Tonestus peirsonii</i>	4.3	S3/G3	

¹CNPS rare plant ranks: 1B = plants rare in CA and elsewhere; 2B = plants rare in CA but more common elsewhere; 3 = Review List: more info needed; 4 = Watch List: plants of limited distribution. Threat rank suffix: 0.1 = seriously threatened in CA (>80% of occurrences threatened); 0.2 = moderately threatened in CA (20–80% of occurrences threatened); 0.3 = not very threatened in CA (<20% of occurrences threatened) (CNPS 2022b).

²NatureServe Conservation Status Ranks: S = state rank; G = global rank; 1 = critically imperiled, very high risk of extirpation/extinction; 2 = imperiled, high risk of extirpation/extinction; 3 = vulnerable, moderate risk of extirpation/extinction; 4 = apparently secure, low risk of extirpation/extinction; 5 = secure, very low or no risk of extirpation (NatureServe 2022).

³SCC = Species of Conservation Concern. Inyo National Forest designation for rare species (USDA Forest Service 2019).

Noteworthy Collections

The following collections are deemed noteworthy because they represent range extensions, new occurrences for particularly rare plants, and/or first records within geographic or political boundaries (i.e., Sierra Nevada, Inyo County, and California). Most are rare plants listed in Table 6 above, but two noteworthy collections of bryophytes currently lacking any conservation status are also discussed.

Bryophytes

Amblyodon dealbatus (Meesiaceae) – Collections of *A. dealbatus* made during this project represent the first records of this species in California and the southernmost known occurrence in North America.

Records on Coyote Ridge and Flat (*Purdy 462, 1287a, 1287b*) are disjunct from the next closest occurrence in northeastern Nevada by over 550 km (350 mi) (CNABH 2022). The species has a NatureServe global conservation rank of Apparently Secure (G4) and is more common in Europe, but wherever it has been evaluated for conservation status in North America it is considered Critically Imperiled (S1), Imperiled (S2), or Vulnerable (S3) (NatureServe 2022). Considering that it is currently

known only from a single site in California, designation of a state-level conservation status is recommended.

Campylostelium laegerae (Ptychomitriaceae) – This rare moss species, described by Brinda et al. in 2016, was previously known only from 10 collections in two Mojave Desert mountain ranges in California—the northern Nopah Range and the southern Funeral Mountains (CNABH 2022). A single collection from the study area (*Purdy* 722), determined by David Toren (coauthor of the species), represents the first record in the Sierra Nevada and a northeastern range extension of over 180 km (110 mi). The species was collected on granitic rock within the study area, yet all other occurrences are on Paleozoic limestone or dolomite (Brinda et al. 2016). Paleozoic marble (metamorphosed limestone) occurs on Coyote Ridge, and it is possible that more thorough surveys of these substrates could yield additional occurrences of *C. laegerae*. Like *A. dealbatus*, *C. laegerae* currently has no rare plant ranking, but evaluation for conservation status within California is recommended given that its endemic and extremely limited distribution within the state.

Moncots

Carex idahoa (Cyperaceae), CNPS rare plant rank 2B.3 – *Carex idahoa* is a rare species throughout most of its range. Collections of this species on Coyote Flat (*Purdy* 967, 1053, 1313) represent only the third time it has been documented outside the White Mountains in California. Other occurrences within the Sierra Nevada are Rock Creek to the north (England 2019) and Cottonwood Lakes Basin to the south (CCH1/2 2022). In wet meadows of Coyote Flat, this species appears to be relatively abundant and fully dioecious. According to descriptions, staminate plants are uncommon and typically not accounted for in keys (Wilson et al. 2008, FNA 1993+, Jepson Flora Project 2022), which made identifying my fully dioecious specimens challenging. An examination of historical collections from the study area revealed that Dean Taylor also documented this species in 1986 (*Taylor* 8822), but incorrectly identified his specimen to *C. scirpoidea* var. *pseudoscirpoidea*.

Stipa divaricata (Poaceae), CNPS rare plant rank 2B.3 – Two collections of *S. divaricata* from Coyote Ridge and Flat (*Purdy 435, 1119*) represent the first known occurrences of this species in the Sierra Nevada. In California, it is relatively rare, mainly occurring in the White Mountains and Mojave Desert ranges (Jepson Flora Project 2022). Outside the state, it is more common and widely distributed from British Columbia to Texas.

Eudicots

Angelica kingii (Apiaceae), CNPS rare plant rank 4.2 – Collections of *A. kingii* from Coyote Ridge and Flat (*Purdy 464, 866, 1213, 1245, 1349*) represent the first records of this species in the Sierra Nevada, and previously it was known only in California from the White Mountains (Jepson Flora Project 2022). Within the study area, *A. kingii* is locally common in riparian corridors of Coyote and Rawson creeks where it is sometimes the most conspicuous species. Most populations appear to be heavily grazed by cattle on an annual basis.

Townsendia leptotes (Asteraceae), CNPS rare plant rank 2B.3 – *Townsendia leptotes* is known from a single collection made on Coyote Ridge by Dean Taylor in 1977 (*Taylor 6552 [UC]*). The specimen was first identified as the more common species, *T. scapigera*, but after careful study I determined it to be *T. leptotes*. Because this collection represents the first occurrence of the species outside the White Mountains in California (Jepson Flora Project 2022), the specimen was given extra scrutiny to rule out a possible label or locality mix-up. However, a review of Taylor's collection numbers surrounding this one gives no reason to suspect that it was recorded on Coyote Ridge in error, so the specimen is included here as another first record for the Sierra Nevada.

Hackelia brevicula (Boraginaceae), CNPS rare plant rank 3.3 – The presence of *H. brevicula* within the study area further reinforces the pattern of cross-valley White Mountains-Coyote Ridge disjunctions.

Hackelia brevicula has been considered endemic to the White Mountains of California and Nevada, where it is found in upper montane to subalpine sagebrush scrub, aspen groves, and dry creek beds (Jepson Flora Project 2022). Fieldwork and an examination of herbarium specimens at RSA conducted for this study document the first records of this species outside the White Mountains. Seven collections are from the Coyote and Rawson creek watersheds within the study area (*Purdy 149, 535, 742, 904, 1285, André 23083 [RSA], DeDecker 2990 [RSA]*) and three are from the upper Bishop Creek watershed immediately to the north (*DeDecker 2166 [RSA], Vollmer 204 [RSA], Woglum 3222 [POM]*). Historical specimens annotated to *H. brevicula* for this study were previously misidentified as *H. micrantha* and *H. floribunda*. Additional discussion of some of these specimens can be found at the following iNaturalist observation: <https://www.inaturalist.org/observations/57603738>.

Lupinus padre-crowleyi (Fabaceae), CNPS rare plant rank 1B.2 – This narrowly endemic lupine species is restricted to 15 occurrences mostly on the east slope of the Sierra Nevada between Owens Lake and Lake Crowley (ca. 146 km/91 mi). Its global distribution is centered within and immediately south of the study area with five occurrences within the study boundary and two in Big Pine Creek (CNDDDB 2020). Four new occurrences outside existing mapped populations were discovered and documented (*Purdy 617, 930, 1022, 1364*) during this study. At one new occurrence, a putative hybrid swarm of *L. padre-crowleyi* and *L. argenteus* var. *heteranthus* was documented with three collections (*Purdy 1024a, 1024b, 1024c*).

Trifolium kingii subsp. *dedeckerae* (Fabaceae), CNPS rare plant rank 1B.3 – This narrowly endemic *Trifolium* species is known only from 12 occurrences in the southern and eastern Sierra Nevada (CNPS 2022a). Although the species does occur farther north in the White Mountains, the newly discovered population within the study area (*Purdy 1020*) represents the taxon's northernmost occurrence in the Sierra Nevada.

Utricularia minor (Lentibulariaceae), CNPS rare plant rank 4.2 – Lesser bladderwort is known from a single collection (*Purdy 490*) in shallow water of a subalpine pond in the Baker Creek watershed. Unfortunately, this specimen is of mediocre quality and lacks reproductive material, but *U. minor* appears to be the best match based on habitat, vegetative characters, and reported distributions and elevation limits of known *Utricularia* species in California. The next most likely Californian *Utricularia* is the non-native *U. macrorhiza*, but leaf characters (i.e., marginal bristles, leaf segments and size) and a comparison to annotated herbarium material at RSA favored a *U. minor* determination. If the identification of this specimen holds up it will represent a rare occurrence of this aquatic and parasitic herb east of the Sierra Nevada crest and the first in Inyo County.

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Appendix 1

Annotated Catalog of the Flora

The following list includes all vascular and nonvascular plant taxa and four unnamed hybrids documented within the study area from field and herbarium work conducted between July 2019 and May 2022. All specimens collected for this project are housed at RSA, unless otherwise noted. The locations of all historical specimens cited are given (i.e., CAS, CHSC, DAV, JEPS, POM, RENO, RSA, UC, UCR). A representative specimen is cited for each taxon, except in the case of rare taxa for which all confirmed collections from within the study area are listed.

Vascular plant nomenclature follows the Jepson eFlora (Jepson Flora Project 2022) except for the genera *Castilleja*, *Kalmia*, *Limosella*, and *Ribes* for which the Flora of North America (FNA 1993+) treatments were used instead because they were found to better describe the diversity present within the study area. With rare exceptions (e.g., specimen already annotated by taxonomic expert), all vascular plant specimens cited here have been examined and annotated for this study.

Moss nomenclature strictly follows FNA volumes 27 and 28 (FNA 1993+) and liverwort nomenclature follows the recent synopsis compiled by Stotler and Crandall-Stotler (2017) for North America. Where bryophyte nomenclature deviates from the above sources on specimen labels (historical or contemporary), the relevant synonyms are given following the taxon name. One moss species described in 2016, *Campylostelium laegerae* Brinda, D.R. Toren & Shevock, not found in FNA volumes 27 and 28, is also documented. Unless otherwise noted, all determinations of bryophytes collected during this study were made by David Toren from duplicates sent to CAS. Historical bryophyte specimens cited were determined by David Toren or Daniel H. Norris.

For each minimum-rank taxon, abundance within the study area and vegetation types it was documented in are given. The abundance categories used are: common = regularly encountered throughout the study area; locally common = narrowly distributed, but generally common/abundant where found; occasional = encountered occasionally or sporadically within the study area, generally not common/abundant where found; uncommon = infrequently encountered within the study area; rare = known from one or very few locations within the study. Rare taxa are indicated with a dagger (†) and have their CNPS rare plant ranks (CRPR) given (CNPS 2022a). Non-native taxa are indicated with an asterisk (*), and taxa known only from historical specimens but not encountered during this study are indicated with a diamond (◆).

LIVERWORTS

CLEVEACEAE

CLEVEA HYALINA (Sommerf.) Lindb. Rare in granitic alpine talus field. Known only from a single location in stable and sheltered north-facing nook, ca. 3500 m (11,500 ft). Determination by David Wagner via photos on iNaturalist. *Purdy 378 (CAS)*.

MARCHANTIACEAE

MARCHANTIA POLYMORPHA L. subsp. MONTIVAGANS Bischl. & Boisselier. (Syn. *M. alpestris* (Nees) Burgeff). Occasional in seeps, creek margins. On wet sod and soil. *Purdy 729*.

RICCIACEAE

RICCIA CAVERNOSA Hoffm. Rare in muddy flat adjacent lodgepole pine forest. *Purdy 712*.

MOSSES

AMBLYSTEGIACEAE

AMBLYSTEGIUM SERPENS (Hedw.) Schimp. Occasional in riparian woodland, creek margins, aspen groves.

Generally on wood, organic soil, or rock within 30 cm of flowing water. Partial to full shade. *Purdy 861*.

CONARDIA COMPACTA (Müll.Hal.) H. Rob. Rare in riparian woodland, creek margins, aspen groves. On sod and roots within 60 cm of flowing water. *Purdy 1256*.

CRATONEURON FILICINUM (Hedw.) Spruce. Common in wet meadows, creek margins, seeps. Generally submerged or just above flowing water, attached to sod or soil. *Purdy 488*.

DREPANOCLADUS ADUNCUS (Hedw.) Warnst. Occasional in seeps, creek margins. Submerged in water or on saturated soil/sod of springs and seeps. *Purdy 825*.

HYGROAMBLYSTEGIUM VARIUM (Hedw.) Mönk. Rare on creek margins. Under dense willow thicket on moist wood and humus. *Purdy 561*.

HYGROHYPNUM OCHRACEUM (Turner ex Wilson) Loeske. (Syn. *Hygrohypnella ochracea* (Turner ex Wilson) Ignatov & Ignatova). Uncommon on creek margins. On wet rock and wood near water. *Purdy 1319*.

PSEUDOCAMPYLIUM RADICALE (P. Beauv.) Vanderp. & Hedenäs. Rare on creek margins. On willow branches spanning the East Fork of Coyote Creek, ca. 15 cm above water. Full shade. First record in Inyo County, and known only from seven previous collections in California (CNABH 2022). *Purdy 978.*

AULACOMNIACEAE

AULACOMNIUM PALUSTRE (Hedw.) Schwägr. Locally common in wet meadows, springs, seeps, especially in the Green and Brown lakes valley. *Purdy 484.*

BARTRAMIACEAE

PHILONOTIS FONTANA Brid. var. AMERICANA (Dis.) Flowers ex H. A. Crum. (Syn. *P. americana* Dis.). Rare in wet meadows, seeps. In wet mud and water. *Purdy 834.*

PHILONOTIS FONTANA Brid. var. FONTANA. Common in wet meadows, creek margins, seeps. Occurring in a wide variety of microclimates and substrates. The most frequently collected moss in the study area. *Purdy 1056.*

PHILONOTIS FONTANA Brid. var. PUMILA (Turner) Bridel. (Syn. *P. pumila* Turner). Rare in wet meadows, seeps. In wet mud and water. *Purdy 835.*

BRACHYTHECIACEAE

BRACHYTHECIASTRUM COLLINUM (Schleich. ex Müll.Hal.) Ignatov & Huttunen. Common in creek margins, rocky alpine slopes. In perennially wet drainages/creeks and sheltered cracks in rock outcroppings. Often associated with calcareous and metamorphic rocks. *Purdy 1180.*

BRACHYTHECIASTRUM FENDLERI (Sull.) Ochyra & Żarowiec. Uncommon in limber pine forest, rocky alpine slopes. In sheltered rocky crevices in drainages and rock outcrops. Full shade. *Purdy 935.*

BRACHYTHECIASTRUM VELUTINUM (Hedw.) Ignatov & Huttunen. Rare in riparian woodland. On wood spanning creek. Full shade. *Purdy 862.*

BRACHYTHECIUM FRIGIDUM (Müll.Hal.) Besch. Occasional in riparian woodland, aspen groves, creek margins. On wood, sod, and rock in or just above flowing water. *Purdy 864.*

HOMALOTHECIUM NEVADENSE (Lesq.) Renaud & Cardot. Rare in aspen groves, lodgepole pine forest. Deep north-facing crevices. *Purdy 1128.*

◆SCIURO-HYPNUM POPULEUM (Hedw.) Ignatov & Huttunen. (Syn. *Brachythecium populeum* (Hedw.) Schimper.). Rare in series of springs (seeps) on north side of West Fork Coyote Creek. Known from a single collection in 2000. Specimen determined to *B. populeum* by Daniel H. Norris from a UC/JEPS duplicate in 2003. *Janeway 6944 (CHSC).*

SCLEROPodium obtusifolium (Mitt.) Kindb. Rare in creeks. Fully submerged in cold flowing water of East Fork Coyote Creek. Known from a single collection. *Purdy 863.*

BRYACEAE

GEMMABRYUM CAESPITICUM (Hedw.) J.R. Spence. Common in aspen groves, creek margins, seeps, alpine talus and rock outcrops. On rocks mesic and xeric microclimates. Generally metamorphic substrates. *Purdy 487.*

GEMMABRYUM KUNZEI (Hornsch.) J.R. Spence. Occasional in sagebrush scrub, limber pine forest, alpine slopes. Rock cracks and crevices in relatively xeric microclimates. *Purdy 794.*

IMBRIBRYUM cf. MUEHLENBECKII (Bruch & Schimp.) N. Pedersen. Rare in seeps, wet meadows. One collection from vertical crack in granite slab with water running over it. *Purdy 426.*

◆PTYCHOSTOMUM PALLESCENS (Schleicher ex Schwagrichen) J. R. Spence. (Syn. *Bryum pallescens* Schleicher ex Schwagrichen). Rare in series of springs (seeps) on north side of West Fork Coyote Creek. Known from a single collection in 2000. Specimen determined to *B. pallescens* by Daniel H. Norris from a UC/JEPS duplicate in 2003. *Janeway 6946 (CHSC).*

PTYCHOSTOMUM cf. TURBINATUM (Hedw.) J.R. Spence. Uncommon in seeps, creek margins. On floating mats of algae and vegetation in springs/seeps. Known only from two collections. *Purdy 251.*

PTYCHOSTOMUM CREBERRIMUM (Taylor) J.R. Spence & H.P. Ramsay. Uncommon on creek margins. Within 1 m of flowing water. *Purdy 349.*

PTYCHOSTOMUM INCLINATUM (Sw. ex Brid.) J.R. Spence. Uncommon on creek and pond margins. *Purdy 253.*

PTYCHOSTOMUM PSEUDOTRIQUETRUM (Hedw.) J.R. Spence & H.P. Ramsay ex Holyoak & N. Pederson. Common in wet meadows, creek margins, seeps, aspen groves. Commonly on sod of vertical to overhanging creek banks. *Purdy 731.*

PTYCHOSTOMUM WEIGELII (Spreng.) J.R. Spence. Occasional in seeps above 3000m (10,000 ft). *Purdy 814.*

◆ROSULABRYUM GEMMASCENS (Kindberg) J. R. Spence. (Syn. *Bryum gemmascens* Kindberg). Rare on moist alpine slope beneath snow bank. Known from a single collection in 2000. Specimen determined to *B. gemmascens* by Daniel H. Norris from a UC/JEPS duplicate in 2003. *Janeway 6926* (CHSC).

CALLIERGONACEAE

SARMENTYPNUM EXANNULATUM (Schimp.) Hedenäs. Rare completely submerged in ponds within alpine wetland. *Purdy 366.*

STRAMINERGON STRAMINEUM (Dicks. ex Brid.) Hedenäs. Uncommon, but locally frequent growing on floating mats of vegetation and logs in alpine wetland. *Purdy 367.*

DICRANACEAE

DICRANOWEISIA CRISPULA (Hedw.) Milde. (Syn. *Hymenoloma crispulum* (Hedw.) Ochyra, Hymenolomataceae). Rare in limber pine forest. Mounded in cracks of granite boulders in dry creek bed. Known from a single collection. *Purdy 934.*

DITRICHACEAE

CERATODON PURPUREUS (Hedw.) Brid. Occasional in sagebrush scrub, alpine talus and scree. *Purdy 1187.*

DISTICHIMUM CAPILLACEUM (Hedw.) Bruch & Schimp. Common in creek margins, aspen groves, alpine slopes. In xeric (alpine rocky outcrops) and mesic (moist sod of creek banks) microclimates. *Purdy 482.*

DISTICHIMUM INCLINATUM (Hedw.) Bruch & Schimp. Occasional in wet meadows, creek margins, seeps, alpine slopes. On moist sod of creeks and seeps and north facing cracks of rock outcrops. *Purdy 732.*

ENCALYPTACEAE

ENCALYPTA RHAPTOCARPA Schwägr. (Syn. *E. intermedia* Jur.). Uncommon on alpine slopes. Deep in cracks of calcareous rocky outcrops. *Purdy 744.*

ENCALYPTA VULGARIS Hedw. Rare in subalpine forest to alpine transition. In cracks of calcareous rock outcrop. Known from a single collection. *Purdy 753* (CAS).

GRIMMIACEAE

COSCINODON CALYPTRATUS (Drumm.) C.E.O. Jensen. Rare in lodgepole pine forest to aspen grove transition. In vertical cracks of north facing granitic boulders. *Purdy 1124.*

GRIMMIA ALPESTRIS (F. Weber & D. Mohr) Schleicher. Uncommon in lodgepole pine forest, rocky alpine slopes. on granitic rocks. *Purdy 721.*

GRIMMIA ANODON Bruch & Schimp. Uncommon in sagebrush scrub, rocky alpine slopes and outcrops. on rocks. *Purdy 1226.*

GRIMMIA NEVADENSIS Greven. Locally common in sagebrush scrub, limber pine forest, whitebark pine forest. Generally on granite. *Purdy 738.*

HYPNACEAE

HYPNUM VAUCHERI Lesq. (Syn. *Buckia vaucheri* (Lesq.) D. Rios, M.T. Gallego & J. Guerra). Rare in alpine talus. On fine layer of soil in full shade of north facing slope. Limited distribution in California, with only two previous occurrences outside the White Mountains (CNABH 2022). 4106 m (13,471 ft). *Purdy 667.*

LESKEACEAE

PSEUDOLESKEA INCURVATA (Hedw.) Loeske. Rare in alpine depression. On sandy soil in sheltered spaces beneath granite boulders. Seasonally wet inlet to Thunder and Lightning Lake. Known from a single collection. *Purdy 651*.

PSEUDOLESKEELLA TECTORUM (Funck ex Brid.) Kindb. ex Broth. Uncommon on alpine slopes. In cracks of calcareous rock outcrops. *Purdy 751*.

MEESIACEAE

AMBLYODON DEALBATUS (Sw. ex Hedw.) Bruch & Schimp. Rare on creek margins. In dense sod of overhanging banks of Rawson Creek, Ford Flat. First record in California. All three collections listed and without RSA duplicates. *Purdy 462, 1287a, 1287b* (CAS).

LEPTOBRYUM PYRIFORME (Hedw.) Wilson. Common in wet meadows, seeps, creek margins. Often forming large bunches on vertical to overhanging creek banks and seep walls. *Purdy 1265*.

MIELICHHOFERIACEAE

†POHLIA BOLANDERI (Lesq.) Broth. Common in wet meadows, seeps, limber pine forest, aspen groves, alpine talus and scree. *Purdy 1185*.

POHLIA CAMPTOTRACHELA (Renauld & Cardot) Broth. Uncommon in seeps, creek margins. On vertical soil banks. *Purdy 764* (CAS).

POHLIA CRUDA (Hedw.) Lindb. Occasional in limber pine forest, seeps, creek margins, alpine slopes. Mostly full shade, deep under rocks or on vertical creek/seep banks in communal mossy mats. *Purdy 480*.

◆POHLIA DRUMMONDII (Müller Hal.) A. L. Andrews. Rare on moist alpine slope beneath snow bank. Known from a single collection in 2000. Specimen determined by Daniel H. Norris from a UC/JEPS duplicate in 2003. *Janeway 6927* (CHSC).

POHLIA WAHLENBERGII (F. Weber & D. Mohr) A.L. Andrews. Occasional in seeps, creek margins, riparian woodland. Wet to moist microclimates in full shade. *Purdy 730*.

MNIACEAE

MNIUM ARIZONICUM Amann. Rare in alpine talus. On fine layer of soil in full shade. North facing talus slope. Relatively few collections known from California. 4106 m (13,471 ft). *Purdy 668*.

MNIUM THOMSONII Schimp. Rare on creek margins. Growing on wet wood and organic material. *Purdy 553*.

PLAGIOMNIUM ELLIPTICUM (Brid.) T.J. Kop. Common on creek margins. Very wet microsites, often in water or splash zone. *Purdy 898*.

POLYTRICHIACEAE

◆POLYTRICHASTRUM ALPINUM (Hedwig) G. L. Smith. Rare moist alpine slope beneath snow bank. Known from a single collection in 2000. Specimen by David Toren in Aug 2014. *Janeway 6928* (CHSC).

POLYTRICHUM JUNIPERINUM Hedw. Occasional in meadows, creek margins, seeps, lodgepole pine forest, alpine slopes. Seasonally moist, but drying microclimates. *Purdy 1236*.

POLYTRICHUM PILIFERUM Hedw. Uncommon in alpine talus and slopes. Generally on DG in seasonally moist alpine sites. *Purdy 379*.

POTTIACEAE

BRYOERYTHROPHYLLUM RECURVIROSTRUM (Hedw.) P.C. Chen. Uncommon on creek margins, moist alpine slopes. *Purdy 1178*.

SYNTRICHIA CANINERVIS Mitt. Rare in sagebrush scrub. Within rocky fins of granitic outcrop, partial sun. *Purdy 881*.

SYNTRICHIA MONTANA Nees. Rare in sagebrush scrub to limber pine forest transition zone. In cracks between granite boulders. *Purdy 936*.

SYNTRICHIA PRINCEPS (De Not.) Mitt. Occasional in limber pine forest, aspen groves, alpine slopes and talus.

Commonly on granite, but also found on calcareous outcrops and other substrates. *Purdy 661.*

SYNTRICHIA RURALIS (Hedw.) F. Weber & D. Mohr. Rare in lodgepole pine forest-meadow transition zone. Partial sun among grasses, rushes, and sedges at drying meadow margin. *Purdy 499.*

TORTULA HOPPEANA (Schultz) Ochyra. Occasional in wet meadows, seeps, creek margins, aspen groves. On wet soil, sand, and sod. *Purdy 593.*

TORTULA LEUCOSTOMA (R.Br.) Hook. & Grev. Rare in seeps. On moist soil/sod of vertical seep bank. Only four previous records known from California (CNABH 2022). *Purdy 815.*

TRICHOSTOMUM CRISPULUM Bruch. Uncommon in aspen groves, alpine slopes. On granite boulders and calcareous rock outcrops. Only eight previous records known from California (CNABH 2022). *Purdy 1125.*

PTYCHOMITRIACEAE

CAMPYLOSTELIUM LAEGERAE Brinda, D.R. Toren & Shevock. Rare in lodgepole pine forest. Partial to full shade on granite boulders. First record in the Sierra Nevada. Previously only known from Mojave Desert ranges. *Purdy 722.*

TIMMIACEAE

TIMMIA MEGAPOLITANA Hedw. subsp. BAVARICA (Hessl.) Brassard. (Syn. *T. bavarica* Hessl.). Occasional on rocky alpine slopes. In cracks of calcareous rock outcrops. *Purdy 1148.*

LYCOPHYTES

ISOETACEAE

ISOETES BOLANDERI Engelm. Aquatic perennial. Locally common in shallow water of lake shores and ephemeral ponds. In silty benthic substrate. Most frequent in the Green and Brown lakes basin. *Purdy 385.*

SELAGINELLACEAE

SELAGINELLA WATSONII Underw. Perennial. Locally common in sagebrush scrub, limber pine forest, whitebark pine forest, rocky alpine and subalpine slopes. In rock outcrops and rocky crevices. *Purdy 420.*

FERNS AND FERN ALLIES

CYSTOPTERIDACEAE

CYSTOPTERIS FRAGILIS (L.) Bernh. Perennial. Common in seeps, sagebrush scrub, rocky alpine terrain. In cracks of rock outcrops or emerging from sheltered spaces underneath boulders. Often in seasonally moist places (e.g., perennial creek beds and washes). *Purdy 608.*

EQUISETACEAE

EQUISETUM ARVENSE L. Annual. Locally common in riparian woodland along lower elevations of Coyote Creek. *Purdy 1352.*

EQUISETUM LAEVIGATUM A. Braun. Annual. Occasional in seeps, meadows. *Purdy 1252.*

OPHIOGLOSSACEAE

†BOTRYCHIUM ASCENDENS W.H. Wagner. CRPR 2B.3. Perennial. Rare in seeps, creek margins. Known only from two localities; not collected at either due to low abundance (<5 plants found per population). Photo voucher. *Purdy 1067.5.*

†BOTRYCHIUM CRENULATUM W.H. Wagner. CRPR 2B.2. Perennial. Rare in seeps. Known only from two localities, one an unvouchered historical Forest Service occurrence where the species was surveyed for but not rediscovered. *Purdy 1067.*

BOTRYCHIUM SIMPLEX E. Hitchc. Perennial. Rare in seeps. Known only from one locality, but relatively common there. *Purdy 1066.*

PTERIDACEAE

PELLAEA BREWERI D.C. Eaton. Perennial. Uncommon in whitebark pine forest, alpine slopes and rock outcrops. In sheltered north-facing crevices of rocky outcrops and cliffs. *Purdy 63.*

CRYPTOGRAMMA ACROSTICHOIDES R. Br. Perennial. Rare in subalpine rock outcrops. Known only from one collection on dark rock outcropping of diorite, quartz diorite, and/or hornblende gabbro. *Purdy 419.*

CRYPTOGRAMMA CASCADENSIS E.R. Alverson. Perennial. Rare in granitic talus and DG soil near treeline. Known only from one locality, but locally abundant there. 3450 m (11320 ft). *Purdy 1050.*

WOODSIACEAE

WOODSIA SCOPULINA D.C. Eaton. Perennial. Occasional in alpine to subalpine talus and outcrops. *Purdy 433.*

GYMNOSPERMS

CUPRESSACEAE

JUNIPERUS GRANDIS R.P. Adams. Tree. Rare in riparian woodland. Only one tree found, along lower Coyote Creek. *Purdy 1198.*

EPHEDRACEAE

EPHEDRA VIRIDIS Coville. Shrub. Locally common in sagebrush scrub below 2900 m (9500 ft). *Purdy 1276.*

PINACEAE

PINUS MONOPHYLLA Torr. & Frém. Tree. Occasional sagebrush scrub. Just creeping into study area on dry lower elevation slopes of eastern border. *Purdy 701.*

PINUS JEFFREYI Grev. & Balf. Tree. Rare in sagebrush scrub. Immature waifs occurring at higher elevations. Only a handful of mature trees encountered on rocky lower elevation slopes and ridges in the eastern portion of the study area. *Purdy 1381.*

PINUS FLEXILIS E. James. Tree. Dominant (or codominant) in limber pine forest. Occasional in sagebrush scrub, whitebark pine forest. Most common in eastern extent of study area on dry rocky slopes *Purdy 541.*

PINUS CONTORTA Loudon subsp. MURRAYANA (Grev. & Balf.) Critchf. Tree. Dominant in lodgepole pine forest and occasional in other vegetation types: sagebrush scrub, limber pine forest, whitebark pine forest, meadows, creek margins. Found bordering lakes, ponds, and wet meadows throughout much of the area with large pure stands in the Baker Creek watershed. *Purdy 1381.*

PINUS ALBICAULIS Engelm. Tree. Dominant in whitebark pine forest. Occasional in lodgepole pine forest and occurring patchily in krummholz stands on alpine ridges and slopes. Especially common in the Green and Brown lakes basin. *Purdy 384.*

EUDICOTS

ADOXACEAE

SAMBUCUS MEXICANA C. Presl ex DC. Small tree (shrub). Uncommon in sagebrush scrub, shrubby aspen groves. Only known from a handful of locations in the eastern part of the study area below 3000 m (10,000 ft). *Purdy 1079.*

APIACEAE

- ANGELICA CAPITELLATA (A. Gray) Spalik, Reduron & S. R. Downie. Perennial. Locally common in seeps, creek and lake margins. *Purdy* 383.
- †ANGELICA KINGII (S. Watson) J.M. Coult. & Rose. CRPR 4.2. Perennial. Locally common in seeps and along creek margins. Coyote and Rawson Creek watersheds below 2900 m (9500 ft). First records in the Sierra Nevada, previously known only from the White Mountains in California. *Purdy* 464, 866, 1213, 1245, 1349.
- ANGELICA LINEARILOBA A. Gray. Perennial. Common in sagebrush scrub, rocky open slopes. *Purdy* 330.
- CYMOPTERUS TEREBINTHINUS (Hook.) Torr. & A. Gray var. CALIFORNICUS (J.M. Coult. & Rose) Jeps. Perennial. Occasional in subalpine rock outcrops, talus, and ridges. Like some other *C. terebinthinus* specimens from the Eastern Sierra region, plants within the study area often appear intermediate between var. *californicus* and var. *petraeus* making drawing a line between the two challenging. *Purdy* 1118.
- CYMOPTERUS TEREBINTHINUS (Hook.) Torr. & A. Gray var. PETRAEUS (M.E. Jones) Goodrich. Perennial. Occasional in subalpine rock outcrops, talus, and ridges. See notes above for *C. terebinthinus* var. *californicus*. *Purdy* 91.
- LOMATIUM MULTIFIDUM (Nutt.) R. P. McNeill & Darrach. Perennial. Uncommon in riparian woodland, sagebrush scrub. *Purdy* 1005.
- LOMATIUM NEVADENSE (S. Watson) J.M. Coult. & Rose var. PARISHII (J.M. Coult. & Rose) Jeps. Perennial. Rare in sagebrush scrub. Known from a single collection and one photo observation. Likely more common, but overlooked. *Purdy* 949.
- †LOMATIUM RIGIDUM (M.E. Jones) Jeps. CRPR 4.3. Perennial. Occasional in sagebrush scrub. *Purdy* 782, 993, *Larson s.n.*, 19 Jul 1972 (CAS).
- PERIDERIDIA PARISHII (J.M. Coult. & Rose) A. Nelson & J.F. Macbr. subsp. LATIFOLIA (A. Gray) T.I. Chuang & Constance. Perennial. Uncommon in wet meadows. *Purdy* 1331.

ASTERACEAE

- ACHILLEA MILLEFOLIUM L. Perennial. Occasional on creek margins, alpine slopes. Generally in wet or seasonally moist habitats. *Purdy* 72.
- AGERATINA OCCIDENTALIS (Hook.) R.M. King & H. Rob. Perennial (subshrub). Uncommon in sagebrush scrub, rocky open slopes. *Purdy* 612.
- AGOSERIS GLAUCA (Pursh) Raf. var. GLAUCA. Perennial. Uncommon in aspen groves, disturbed roadsides. *Purdy* 563.
- AGOSERIS MONTICOLA Greene. Perennial. Occasional in alpine fellfields, talus, creek margins. *Purdy* 331.
- AGOSERIS PARVIFLORA (Nutt.) D. Dietr. Perennial. Uncommon in sagebrush scrub, alpine slopes. *Purdy* 798.
- ANTENNARIA MEDIA Greene. Perennial. Occasional in meadows, alpine slopes and rock outcrops. Seasonally moist areas. Some plants appearing intermediate with and difficult to distinguish from *A. pulchella*. *Purdy* 1145.
- †ANTENNARIA PULCHELLA Greene. CRPR 4.3. Perennial. Occasional in alpine fellfields and slopes. Often seasonally moist areas. Some plants appearing intermediate with and difficult to distinguish from *A. media*. *Purdy* 23, 953, *Raven* 211, 211A (CAS), *Castro* 1310 (CHSC).
- ANTENNARIA ROSEA Greene subsp. CONFINIS (Greene) R.J. Bayer. Perennial. Rare in alpine fellfields. Known from a single collection south of the Hunchback. Leaf lengths shorter than descriptions. *Purdy* 11.
- ANTENNARIA ROSEA Greene subsp. ROSEA. Perennial. Uncommon in meadows, alpine slopes. *Purdy* 109b.
- ARNICA CHAMISSONIS Less. Perennial. Occasional in meadows, riparian woodland. *Purdy* 772.
- ARNICA LANCEOLATA Nutt. subsp. PRIMA (Maguire) Strother & S.J. Wolf. Perennial. Locally common on creek margins within the Rawson Creek watershed below 2750 m (9000 ft). *Purdy* 894.
- ARNICA PARRYI A. Gray. Perennial. Common in meadows and around edges of receding lake shores and ephemeral ponds. The plants assigned here to *A. parryi* are the most abundant members of the genus within the study area, but do not key easily in the Jepson eFlora (Jepson Flora Project 2022) or FNA (1993+) treatments. They appear to fit best *A. parryi* var. *sonnei* (Greene) Cronquist as described in Intermountain Flora (Cronquist et al. 1995), except the heads are not always nodding in bud. *Purdy* 915.
- ARTEMISIA CANA Pursh subsp. BOLANDERI (A. Gray) G.H. Ward. Shrub. Locally common in meadows, seeps, and riparian woodland within the Rawson Creek watershed. *Purdy* 779.
- ARTEMISIA DRACUNCULUS L. Perennial. Common in alpine fellfields, scree, talus, and rock outcrops. *Purdy* 46.

ARTEMISIA LUDOVICIANA Nutt. subsp. INCOMPACTA (Nutt.) D.D. Keck. Perennial. Uncommon in perennial creek beds and moist alpine slopes. Some plants appearing intermediate with *A. michauxiana*. *Purdy 311*.

ARTEMISIA MICHAUXIANA Besser. Perennial. Rare in metamorphic alpine talus and scree. *Purdy 1152*.

ARTEMISIA ROTHROCKII A. Gray. Shrub. Common in sagebrush scrub, creek margins, alpine slopes and depressions. The same gray-form present in the White Mountains. Where it co-occurs with *A. tridentata* subsp. *vaseyana*, *A. rothrockii* is found in moister microclimates. 2900-3500 m (9500-11,500 ft). *Purdy 588*.

ARTEMISIA TRIDENTATA Nutt. subsp. VASEYANA (Rydb.) Beetle. Shrub. Common (to dominant) in sagebrush scrub, limber pine forest. 2600-3300 m (8535-11,000 ft). *Purdy 1353*.

BALSAMORHIZA SAGITTATA (Pursh) Nutt. Perennial. Rare in sagebrush scrub. Known from a single collection on SE-facing slope of mixed metamorphics. *Purdy 792*.

CHAENACTIS ALPIGENA Sharsm. Perennial. Common in open whitebark pine forest, alpine fellfields, slopes, and saddles. *Purdy 227*.

CHAENACTIS DOUGLASII (Hook.) Hook. & Arn. var. DOUGLASII. Biennial (perennial). Occasional in sagebrush scrub and receding lake shore habitats. Often in open and disturbed DG soils. *Purdy 875*.

◆CHRYSOETHAMNUS VISCIDIFLORUS (Hook.) Nutt. subsp. PUBERULUS (D.C. Eaton) H.M. Hall & Clem. Shrub. Rare on margins of the West Fork of Coyote Creek. Known from a single collection in 1969. *Frommer s.n.*, 17 August 1969 (RSA).

CHRYSOETHAMNUS VISCIDIFLORUS (Hook.) Nutt. subsp. VISCIDIFLORUS. Shrub. Common in sagebrush scrub, alpine communities, and rock outcrops throughout the study area. *Purdy 1231*.

CIRSIIUM SCARIOSUM Nutt. var. CONGDONII (R.J. Moore & Frankton) D.J. Keil. Biennial (short-lived perennial). Occasional in wet meadows, creek margins. In heavily grazed riparian corridors of Coyote, Rawson, and Onion creeks. *Purdy 143*.

CREPIS ACUMINATA Nutt. Perennial. Uncommon in sagebrush scrub. *Purdy 284*.

CREPIS INTERMEDIA A. Gray. Perennial. Rare in sagebrush scrub. *Purdy 1006*.

CREPIS NANA Richardson. Perennial. Uncommon in calcareous alpine scree and outcrops. *Purdy 413*.

DIETERIA CANESCENS (Pursh) Nutt. var. CANESCENS. Perennial. Occasional in sagebrush scrub, alpine depressions, slopes, and ridges. *Purdy 737*.

EATONELLA NIVEA (D.C. Eaton) A. Gray. Annual. Rare in open DG soil of sagebrush scrub. Known from a single collection along Rawson Creek. 2801 m (9189 ft). *Purdy 874*.

ERICAMERIA DISCOIDEA (Nutt.) G.L. Nesom. Shrub. Common in sagebrush scrub, perennial creek beds, alpine communities. *Purdy 40*.

ERICAMERIA NAUSEOSA (Pursh) G.L. Nesom & G.I. Baird var. BERNARDINA (H.M. Hall) G.L. Nesom & G.I. Baird. Shrub. Locally common in sagebrush scrub in open DG soil. *Purdy 1368*.

ERICAMERIA NAUSEOSA (Pursh) G.L. Nesom & G.I. Baird var. OREOPHILA (A. Nelson) G.L. Nesom & G.I. Baird. Shrub. Rare in sagebrush scrub. A single large shrub known from turnout along Coyote Valley Road adjacent riparian woodland of lower Coyote Creek. 2708 m (8885 ft). *Purdy 1382*.

ERICAMERIA SUFFRUTICOSA (Nutt.) G.L. Nesom. Shrub. Occasional in sagebrush scrub, alpine slopes and ridges. *Purdy 274*.

ERIGERON ALGIDUS Jeps. Perennial. Uncommon in alpine fellfields and rock outcrops. *Purdy 53*.

ERIGERON APHANACTIS (A. Gray) Greene var. APHANACTIS. Perennial. Uncommon in sagebrush scrub below 2750 m (9000 ft). *Purdy 849*.

ERIGERON BREWERI A. Gray var. BREWERI. Perennial. Rare in sagebrush scrub. *Purdy 1361*.

ERIGERON BREWERI A. Gray var. PORPHYRETICUS (M.E. Jones) Cronquist. Perennial. Occasional in sagebrush scrub. *Purdy 582*.

ERIGERON CLOKEYI Cronquist var. PINZLIAE G.L. Nesom. Perennial. Occasional in sagebrush scrub, perennial creek beds, alpine fellfields. *Purdy 288*.

ERIGERON COMPOSITUS Pursh. Perennial. Common in alpine communities and exposed rocky ridges, saddles, and outcrops. *Purdy 1047*.

ERIGERON GLACIALIS (Nutt.) A. Nelson var. GLACIALIS. Perennial. Uncommon in wet meadows, creek margins. *Purdy 321*.

ERIGERON LONCHOPHYLLUS Hook. Perennial. Occasional in wet meadows exposed to cattle grazing. *Purdy 455*.

ERIGERON PYGMAEUS (A. Gray) Greene. Perennial. Common in various alpine habitats: fellfields, scree slopes, and sandy ridges. *Purdy 49*.

ERIGERON VAGUS Payson. Perennial. Rare in alpine talus. Known from a single collection on north-facing slope of Cloudripper. 4102 m (13458 ft). *Purdy 663*.

ERIOPHYLLUM LANATUM (Pursh) J. Forbes var. INTEGRIFOLIUM (Hook.) Smiley. Perennial. Locally common in whitebark pine forest. Especially frequent in the Green and Brown lakes basin. *Purdy 166.*

GNAPHALIUM PALUSTRE Nutt. Annual. Locally common in muddy flats and exposed shores of creeks, lakes, and perennial ponds. *Purdy 1376.*

HIERACIUM HORRIDUM Fr. Perennial. Uncommon in sagebrush scrub, whitebark pine forest, alpine talus. In exposed rocky areas. *Purdy 333.*

HULSEA ALGIDA A. Gray. Perennial. Locally common on sandy alpine slopes, ridges, and saddles. Granitic substrates. *Purdy 39.*

HYMENOXYS HOOPEsii (A. Gray) Bierner. Perennial. Common in meadows, seeps, creek margins. Ubiquitous in wet and seasonally wet areas throughout the study area. *Purdy 74.*

OREOSTEMMA ALPIGENUM (Torr. & A. Gray) Greene var. ANDERSONII (A. Gray) G.L. Nesom. Perennial. Uncommon in wet meadows in the Green and Brown lakes basin. *Purdy 319.*

PACKERA CANA (Hook.) W.A. Weber & Á. Löve. Perennial. Common in sagebrush scrub, whitebark pine forest, alpine fellfields. *Purdy 273.*

PACKERA PAUCIFLORA (Pursh) Á. Löve & D. Löve. Perennial. Uncommon in shady seeps and wet meadows of Green and Brown lakes basin. *Purdy 990.*

PACKERA WERNERIIFOLIA (A. Gray) W.A. Weber & Á. Löve. Perennial. Uncommon on alpine slopes and ridges. *Purdy 1045.*

PLEIACANTHUS SPINOSUS (Nutt.) Rydb. Perennial. Uncommon on alpine slopes. Known from one contemporary collection and one collection in 1950. Not observed or collected in flower during the study. Recent collection from 3181 m (1043 ft), which is ca. 300 m above upper elevation limit of 2900 m listed in the Jepson eFlora (Jepson Flora Project 2022). *Purdy 259.*

PYRROCOMA APARGIOIDES (A. Gray) Greene. Perennial. Locally common in open whitebark pine forest, alpine fellfields and depressions. *Purdy 228.*

PYRROCOMA LANCEOLATA (Hook.) Greene var. LANCEOLATA. Perennial. Rare in compacted and disturbed soil of dirt road within sagebrush scrub vegetation. Known from a single collection in Rawson Creek watershed. First record in Inyo County and potential southern range extension in California. Specimen warrants further study and/or expert confirmation. *Purdy 580b.*

RAILLARDELLA ARGENTEA (A. Gray) A. Gray. Perennial. Common in alpine fellfields, whitebark pine forest. *Purdy 15.*

SENECIO HYDROPHILUS Nutt. Perennial. Rare on creek margins. Known only from one locality along the East Fork of Coyote Creek. *Purdy 1355.*

SENECIO INTEGERRIMUS Nutt. var. EXALTATUS (Nutt.) Cronquist. Perennial. Locally common in sagebrush scrub, meadows, creek margins. Normally in wet or seasonally wet areas. *Purdy 99.*

SENECIO SCORZONELLA Greene. Perennial. Uncommon in alpine seeps of Baker Creek watershed. *Purdy 654.*

SENECIO SPARTIOIDES Torr. & A. Gray. Subshrub. Uncommon on alpine and subalpine slopes. Single collection from this study on steep slope of calcareous scree. *Purdy 258.*

SENECIO TRIANGULARIS Hook. Perennial. Uncommon in riparian woodland near flowing water. *Purdy 1069.*

SOLIDAGO MULTIRADIATA Aiton. Perennial. Occasional in wet meadows, seeps, creek and lake margins. *Purdy 175.*

SPHAEROMERIA CANA (D.C. Eaton) A. Heller. Subshrub. Occasional in alpine talus, scree, and rocky outcrops. Synonym of *Artemisia albicans* Són. García, Garnatje, McArthur, Pellicer, S.C. Sand. & Vallès-Xirau. *Purdy 434.*

STEPHANOMERIA EXIGUA Nutt. subsp. CORONARIA (Greene) Gottlieb. Annual. Uncommon in sagebrush scrub. Most frequent along roads but also observed elsewhere. *Purdy 1087.*

STEPHANOMERIA TENUIFOLIA (Raf.) H.M. Hall. Perennial. Rare on rocky subalpine ridgeline south of Round Mountain. Growing within other plants and shrubs including *Linanthus pungens*. *Purdy 611.*

SYMPHYOTRICHUM CAMPESTRE (Nutt.) G.L. Nesom. Perennial. Uncommon in sagebrush scrub, creek margins. Often in disturbed soil of roads or cattle trails. *Purdy 564.*

SYMPHYOTRICHUM LANCEOLATUM (Willd.) G.L. Nesom var. HESPERIUM (A. Gray) G.L. Nesom. Perennial. Locally common in riparian woodland, seeps, creek margins. *Purdy 1212.*

SYMPHYOTRICHUM SPATHULATUM (Lindl.) G.L. Nesom var. SPATHULATUM. Perennial. Common in wet meadow and creek margins. *Purdy 565.*

*TARAXACUM OFFICINALE F.H. Wigg. Annual. Occasional in wet meadows, seeps, and creek margins exposed to cattle grazing. *Purdy 828.*

TETRADYMIA CANESCENS DC. Shrub. Uncommon in sagebrush scrub. *Purdy 528.*

†TONESTUS PEIRSONII (D.D. Keck) G.L. Nesom & D.R. Morgan. CRPR 4.3. Perennial. Locally common in granitic talus, scree, and rocky outcrops above 3200 m (10,500 ft). *Purdy 38, 302, 511, 628.*

- ♦†TOWNSENDIA LEPTOTES (A. Gray) Osterh. CRPR 2B.3. Perennial. Rare in alpine fellfields of Coyote Ridge. Known from a single collection in 1977. The only specimen known from the Sierra Nevada. *Taylor 6552* (JEPS).
- *TRAGOPOGON DUBIUS Scop. Perennial. Rare in wet meadows. A small population only known from one section of roadside meadow vegetation in Rawson Creek watershed. Photo voucher. *Purdy 701.5*.

BORAGINACEAE

- CRYPTANTHA WATSONII (A. Gray) Greene. Annual. Locally common in disturbed road margins and sagebrush scrub along lower Coyote Valley Road. *Purdy 1202*.
- GRENEOCHARIS CIRCUMSCISSA (Hook. & Arn.) Rydb. var. CIRCUMSCISSA. Annual. Uncommon in disturbed road margins/turnouts, sagebrush scrub. In open disturbed soil below 2750 m (9000 ft). *Purdy 532*.
- †HACKELIA BREVICULA (Jeps.) J.L. Gentry. CRPR 3.3. Perennial (biennial). Occasional in sagebrush scrub, aspen groves, creek margins, rock outcrops. First records of this species outside of the White Mountains and in the Sierra Nevada. Historical *H. micrantha* collections from the study area (as well as some in the adjacent Bishop Creek watershed) were also determined to be this species. 2665-3319 m (8744-10,890 ft). *Purdy 149, 535, 742, 904, 1285, André 23083* (RSA), *DeDecker 2990* (RSA).
- LAPPULA REDOWSKII (Hornem.) Greene var. REDOWSKII. Annual. Rare in disturbed road margins and turnouts, sagebrush scrub. Known from a single locality in Rawson Creek watershed. *Purdy 581*.
- OREOCARYA CONFERTIFLORA Greene. Perennial. Common in sagebrush scrub, rock outcrops. Dry rocky soils. *Purdy 160*.
- OREOCARYA HUMILIS (A. Gray) Greene subsp. HUMILIS. Perennial. Occasional in alpine fellfields, slopes, and ridges. Rarely collected with mature nutlets and challenging to distinguish from *O. nubigena* when immature. *Purdy 129*.
- OREOCARYA NUBIGENA Greene. Perennial. Occasional in alpine talus, slopes, and ridges. Often in open DG soil. Rarely collected with mature nutlets and challenging to distinguish from *O. humilis* subsp. *humilis* when immature. *Purdy 1140*.
- PLAGIOBOTHRYIS HISPIDULUS (Greene) I.M. Johnst. Annual. Rare in disturbed muddy flats of meadows/creek margins. Known from a single collection in muddy flats adjacent East Fork of Coyote Creek. This area heavily impacted by cattle. *Purdy 1289*.

BRASSICACEAE

- ANELSONIA EURYCARPA (A. Gray) J.F. Macbr. & Payson. Perennial. Uncommon on exposed alpine slopes. Known primarily from the north slope of the Hunchback. *Purdy 45*.
- BARBAREA ORTHOCERAS Ledeb. Perennial. Occasional in seeps, meadows, creek margins. *Purdy 818*.
- BOECHERA DEPAUPERATA (A. Nelson & P.B. Kenn.) Windham & Al-Shehbaz. Perennial. Occasional in sagebrush scrub, granite outcrops, alpine talus and slopes. Polyploid species with the narrowest fruits of any *Boechera* on Coyote Ridge/Flat. *Purdy 374*.
- BOECHERA HOWELLII (S. Watson) Windham & Al-Shehbaz. Perennial. Common. In sagebrush scrub, whitebark pine forest, alpine talus, slopes, and depressions. In open DG soil above 3100 m (10,200 ft). *Purdy 1036*.
- BOECHERA INYOENSIS (Rollins) Al-Shehbaz. Perennial. Uncommon in sagebrush scrub, limber pine forest. Collections from granitic substrates. *Purdy 929*.
- BOECHERA LEMMONII (S. Watson) W.A. Weber. Perennial. Occasional in alpine talus, scree, and rocky outcrops. Granitic and calcareous substrates. One putative hybrid specimen (with spherical pollen and irregularly arranged fruits) included here. *Purdy 65*.
- ♦BOECHERA LYALLII (S. Watson) Dorn. Perennial. Rare in alpine fellfields. Known from a single collection in 1972, on "exposed summit" of Coyote Ridge. *DeDecker 3024-A* (RSA).
- BOECHERA PAUPERULA (Greene) Windham & Al-Shehbaz. Perennial. Occasional in alpine fellfields, rock outcrops. One putative hybrid specimen (with spherical pollen) included here. *Purdy 1144*.
- BOECHERA PLATYSPERMA (A. Gray) Al-Shehbaz. Perennial. Occasional in sagebrush scrub, alpine talus, slopes, and depressions. Dry rocky soils. Three putative hybrid specimens (with spherical pollen) included here. *Purdy 266*.
- BOECHERA PRATINCOLA (Greene) Windham & Al-Shehbaz. Perennial. Uncommon in meadows, lodgepole pine forest, creek margins. *Purdy 945*.
- BOECHERA PUBERULA (Nutt.) Dorn. Perennial. Rare in sagebrush scrub, road margins. Known from a single locality in Baker Creek watershed. Photo voucher. *Purdy 102.5*.

- †BOECHERA PYGMAEA (Rollins) Al-Shehbaz. CRPR 4.3. Perennial. Uncommon in whitebark pine forest, sandy alpine-subalpine slopes. On dry slopes of DG soil. *Purdy 200, 1141.*
- BOECHERA REPANDA (S. Watson) Al-Shehbaz. Perennial. Rare in whitebark pine forest, rock outcrops. Known from a single population on a red metamorphic rock outcrop southwest of Lindner Prospect. *Purdy 741.*
- BOECHERA RETROFRACTA (Graham) Á. Löve & D. Löve. Perennial. Occasional in sagebrush scrub. One putative hybrid specimen (with spherical pollen) included here. *Purdy 788.*
- CARDAMINE BREWERI S. Watson. Perennial. Rare on creek margins. Known from a single collection in Rawson Creek watershed. *Purdy 770.*
- ◆CAULANTHUS PILOSUS S. Watson. Perennial. Rare. Known from a single collection in 1950 with vague locality: "Coyote Ridge." 2930 m (9600 ft). *Raven 182 (CAS, UC).*
- DESCURAINIA CALIFORNICA (A. Gray) O.E. Schulz. Annual (biennial). Occasional in sagebrush scrub, riparian woodland, wet meadows, receding lake shores. *Purdy 144.*
- *DESCURAINIA SOPHIA (L.) Webb ex Prantl. Annual. Uncommon along road margins and in sagebrush scrub and creek margins below 2900 m (9500 ft). *Purdy 857.*
- DRABA ALBERTINA Greene. Annual. Locally common in receding lake shores, wet meadows, creek margins, alpine fellfields. Seasonally moist areas, often in disturbed and open soil. *Purdy 22.*
- DRABA BREWERI S. Watson. Perennial. Occasional in alpine talus, ridges, and slopes. *Purdy 676.*
- DRABA DENSIFOLIA Nutt. Perennial. Occasional in whitebark pine forest, rock outcrops, alpine fellfields, ridges, and summits. *Purdy 86.*
- DRABA LEMMONII S. Watson. Perennial. Uncommon in alpine fellfields, slopes, and ridges. *Purdy 388.*
- DRABA OLIGOSPERMA Hook. Perennial. Common in alpine fellfields, slopes, and rock outcrops. *Purdy 87.*
- †DRABA PRAEALTA Greene. CRPR 2B.3. Annual (short-lived perennial). Rare in alpine seep/wet meadow habitat. Known from a single population in seeps above Rocky Bottom Lake. *Purdy 429, 1164.*
- †DRABA SUBUMBELLATA Rollins & R.A. Price. CRPR 4.3. Perennial. Common in alpine fellfields and talus. Especially common in the unglaciated alpine terrain around the Hunchback. Outside of Coyote Ridge, this species is restricted to alpine zones of the White Mountains. *Purdy 14, 236, 237, 267, 300, 377, 671, 672, Raven 235 (UC), Matson 2855 (RENO), DeDecker 3029 (RSA), Taylor 6635 (RSA), 15418 (JEPS, RSA), Howell 23980 (CAS, RSA).*
- ERYSIMUM CAPITATUM (Douglas ex Hook.) Greene var. CAPITATUM. Biennial (short-lived perennial). Uncommon in sagebrush scrub. *Purdy 285.*
- *HORNUNGIA PROCUMBENS (L.) Hayek. Annual. Uncommon in wet meadows, creek margins. In wet cattle-grazed regions of Rawson Creek watershed. *Purdy 912.*
- PHOENICAILIS CHEIRANTHOIDES Nutt. Perennial. Locally common in sagebrush scrub, perennial creek beds, rock outcrops, alpine slopes. Coyote Creek watershed. *Purdy 124.*
- PHYSARIA KINGII subsp. KINGII. Perennial. Rare in alpine fellfields. Known from a single collection in saddle between Lookout Mtn and rocky peaklet to the east. Calcareous (marble) substrate. New record for the southern High Sierra Nevada Jepson bioregion. Previous Sierra Nevada records from north of Tioga Pass. *Purdy 128.*
- RORIPPA CURVISILIQUA (Hook.) Bessey ex Britton. Annual. Locally common in receding lake shores, perennial ponds, alpine depressions. *Purdy 209.*
- STREPTANTHUS CORDATUS Nutt. var. CORDATUS. Perennial. Uncommon in subalpine granitic rock outcrops. Known only two localities along ridgeline south of Round Mountain. *Purdy 1029.*

CACTACEAE

- OPUNTIA POLYACANTHA Haw. var. ERINACEA (Engelm. & J.M. Bigelow) B.D. Parfitt. Shrub. Uncommon in sagebrush scrub. Scattered on dry sagebrush scrub slopes up to 3131 m (10,274 ft), which is nearly 1000 m higher than the upper elevation listed in the Jepson flora of 2200 m (Jepson Flora Project 2022). *Purdy 800.*

CAPRIFOLIACEAE

- SYMPHORICARPOS ROTUNDIFOLIUS A. Gray var. PARISHII (Rydb.) Dempster. Shrub. Occasional in sagebrush scrub, perennial creeks and drainages. *Purdy 938.*
- SYMPHORICARPOS ROTUNDIFOLIUS A. Gray var. ROTUNDIFOLIUS. Shrub. Common in sagebrush scrub, creek margins, limber pine forest. *Purdy 872.*

CARYOPHYLLACEAE

- EREMOGONE FERRISIAE (Abrams) R.L. Hartm. & Rabeler. Perennial. Uncommon in sagebrush scrub. *Purdy 184*.
- EREMOGONE KINGII (S. Watson) Ikonn. var. GLABRESCENS (S. Watson) Dorn. Perennial. Common in sagebrush scrub, road margins, alpine fellfields. *Purdy 4*.
- MINUARTIA NUTTALLII (Pax) Briq. var. GRACILIS (B.L. Rob.) Rabeler & R.L. Hartm. Perennial. Occasional in whitebark pine forest, alpine ridges and slopes. In open DG soil. *Purdy 202*.
- ◆MINUARTIA RUBELLA (Wahlenb.) Hiern. Perennial. Rare in alpine areas. Known from a single collection in 1977, "unglaciated slopes of Coyote Ridge, Bishop Creek drainage," 3444 m (11,300 ft). *Taylor 6635* (JEPS).
- ◆†MINUARTIA STRICTA (Sw.) Hiern. CRPR 2B.3. Perennial. Rare in alpine areas. Known from a single collection in 1977, "unglaciated granitic slopes of Coyote Ridge, Bishop Creek drainage," 3475 m (11,400 ft). *Taylor 6636* (JEPS).
- SAGINA SAGINOIDES (L.) H. Karst. Perennial. Uncommon on creek margins, receding lake shores. In wet soil and sand. Plants often appearing annual. *Purdy 505*.
- SILENE BERNARDINA S. Watson. Perennial. Occasional in sagebrush scrub. *Purdy 1365*.
- SILENE MENZIESII Hook. Perennial. Uncommon in wet meadows, aspen groves. In shady sites. Wet meadow plants found growing exclusively under shrubs. *Purdy 576*.
- SILENE SARGENTII S. Watson. Perennial. Occasional in alpine fellfields, ridges, and outcrops. Generally in sheltered sites, north and east aspects. *Purdy 1122*.
- STELLARIA CALYCANTHA (Ledeb.) Bong. Perennial. Rare in seeps. Known from a single collection in Rawson Creek watershed. *Purdy 941*.
- STELLARIA LONGIPES Goldie subsp. LONGIPES. Perennial. Locally common in wet meadows throughout study area. *Purdy 685*.

CHENOPODIACEAE

- *CHENOPODIUM ALBUM L. Annual. Rare in dry meadows. Known from a single collection in disturbed and grazed meadow within Rawson Creek watershed. ID somewhat tentative because collection lacks mature fruit and elevation (2660 m / 8724 ft) is well above upper range listed in the Jepson eFlora of 1800 m (Jepson Flora Project 2022). However, vegetative characters (i.e., plant height, leaf size) fit well with this species and alternative *Chenopodium* species with large serrate leaves (i.e., *C. berlandieri*) seem less likely based on morphology and historical collections. *Purdy 778*.
- CHENOPODIUM ATROVIRENS Rydb. Annual. Locally common in sagebrush scrub, road margins, receding lake shores. In open disturbed areas. *Purdy 1347*.
- ◆CHENOPODIUM DESICCATUM A. Nelson. Annual. Rare in sagebrush scrub, road margins. Known from a single collection in 2010. *André 23083* (UCR). Not yet examined.
- CHENOPODIUM LEPTOPHYLLUM (Moq.) Nutt. ex S. Watson. Annual. Uncommon in sagebrush scrub. Open disturbed soil. Known from two collections, one historical and one made during this study. *Purdy 1286*.
- GRAYIA SPINOSA (Hook.) Moq. Shrub. Uncommon in sagebrush scrub. Open rocky slopes. *Purdy 878*.
- MONOLEPIS NUTTALLIANA (Schult.) Greene. Annual. Rare in wet meadows. Known from a single collection in cattle-grazed meadows of Ford Flat. *Purdy 951*.

CRASSULACEAE

- RHODIOLA INTEGRIFOLIA Raf. Perennial. Uncommon in rocky alpine cliffs, slopes, and ridges. *Purdy 313*.
- SEDUM LANCEOLATUM Torr. Perennial. Rare in alpine fellfields and drainages. Known from a single collection in moister microclimate of dry wash on plateau south of the Hunchback. *Purdy 391*.

ERICACEAE

- ARCTOSTAPHYLOS PATULA Greene. Shrub. Locally common on (although restricted to) south-facing sagebrush scrub slopes in SE corner of study area. Baker and Onion creek watersheds below 3050 m (10,000 ft). *Purdy 1088*.
- KALMIA MICROPHYLLA (Hooker) A. Heller var. MICROPHYLLA. Shrub. Uncommon on lake margins, whitebark pine forest. Known from Green and Brown lakes basin and unnamed lake at head of the Baker Creek watershed. *Purdy 1051*.

- PHYLLODOCE BREWERI (A. Gray) Maxim. Shrub. Uncommon on lake margins, whitebark pine forest. Known from a single collection along west shore of Green Lake, but observed elsewhere in that basin and Baker Creek watershed. *Purdy 1242*.
- PYROLA MINOR L. Perennial. Rare in lodgepole pine forest. Known only from one location in the lower Baker Creek watershed. Plant not collected due to local rarity. Photo voucher. *Purdy 1326.5*.
- RHODODENDRON COLUMBIANUM (Piper) Harmaja. Shrub. Rare in wet meadow to lodgepole pine forest transition. Known from a single collection around Bluff Lake, Green and Brown lakes basin. *Purdy 326*.

FABACEAE

- ASTRAGALUS LENTIGINOSUS Douglas var. INEPTUS (A. Gray) M.E. Jones. Perennial. Common in sagebrush scrub, whitebark pine forest, receding lake shores, alpine fellfields, slopes and ridges. Often in open disturbed soil. *Purdy 226*.
- ASTRAGALUS PURSHII Douglas var. LECTULUS (S. Watson) M.E. Jones. Perennial. Common in sagebrush scrub, alpine fellfields, ridges, and talus fields. Flowers often yellow to cream colored, not the pink or pale purple of descriptions. *Purdy 82*.
- ASTRAGALUS WHITNEYI A. Gray var. WHITNEYI. Perennial. Common in sagebrush scrub, road margins, alpine fellfields. Found throughout the study area. *Purdy 156*.
- HOSACKIA CRASSIFOLIA Benth. var. CRASSIFOLIA. Perennial (subshrub). Locally common in open terrain and sagebrush scrub of 2002 Piper Fire burn scar. Plants collected at 2900 m (9500 ft) which is 800 m above listed elevation limit in the Jepson eFlora of 2100 m (Jepson Flora Project 2022). *Purdy 1090*.
- LUPINUS ARBUSTUS Douglas. Perennial. Uncommon in sagebrush scrub. *Purdy 1007*.
- LUPINUS ARGENTEUS Pursh var. ARGENTEUS. Perennial. Rare in sagebrush scrub. Known from a single collection in southeast corner of the study area. 2707 m (8881 ft). *Purdy 858*.
- LUPINUS ARGENTEUS Pursh var. HETERANTHUS (S. Watson) Barneby. Perennial. Occasional in sagebrush scrub, lodgepole pine forest. *Purdy 35*.
- LUPINUS ARGENTEUS Pursh var. MONTIGENUS (A. Heller) Barneby. Perennial. Common in sagebrush scrub, perennial creek beds, open sandy flats and slopes. A spectrum of *L. argenteus* variation occurs on Coyote Ridge and Flat, and the most abundant morphotypes (densely hairy plants without spurred calyces) are placed here. These plants are highly variable but typically differ from the Jepson eFlora (Jepson Flora Project 2022) and Intermountain Flora (Cronquist et al. 1972–2012) descriptions of var. *montigenus* in having some spreading stem hairs, long woolly hairy banner backs, shorter petioles (gen. < 5 cm), and by lacking basal leaves at anthesis. *Purdy 803*.
- LUPINUS BREWERI A. Gray var. BRYOIDES C.P. Sm. Perennial. Common in sagebrush scrub, sandy subalpine saddles, road margins. Particularly common along road margins on Coyote Flat. *Purdy 83*.
- LUPINUS LEPIDUS Douglas ex Lindl. var. CONFERTUS (Kellogg) C.P. Sm. Perennial. Locally common in seasonally moist sagebrush scrub, meadows, seeps, and alpine slopes. Most abundant in Coyote Creek watershed, forming impressively large stands following above average precipitation in 2019. *Purdy 30*.
- LUPINUS LEPIDUS Douglas ex Lindl. var. RAMOSUS (Kellogg) Barneby. Perennial. Locally common in alpine fellfields, slopes, and drainages. Typically in areas of seasonal moisture. Occasionally intergrading with *L. lepidus* var. *confertus*. *Purdy 59a*.
- †LUPINUS PADRE-CROWLEYI C.P. Sm. CRPR 1B.2. Perennial. Occasional in sagebrush scrub. Often in relatively open DG soil. Several new occurrences discovered during this project. *Purdy 617, 930, 1022, 1364, Taylor 7928* (CAS, DAV, JEPS), 7930 (CAS), 8820 (UC), *Larson s.n.*, 19 July 1972 (CAS), *Peirson 2551* (CAS), *André 23095* (RSA), *Emmel 1352* (RSA), *DeDecker* (3004).
- LUPINUS PADRE-CROWLEYI C.P. Sm. × *L. ARGENTEUS* (Pursh) var. HETERANTHUS (S. Watson) Barneby. Perennial. Rare in sagebrush scrub. Putative hybrids between *L. padre-crowleyi* and *L. argenteus* var. *heteranthus* were documented in a single location where these two taxa co-occurred. Three collections were made documenting variation present among hybrid individuals. *Purdy 1024a, 1024b, 1024c*.
- ♦LUPINUS PRATENSIS A. Heller var. ERIOSTACHYUS C.P. Sm. Perennial. Rare in sagebrush scrub, road margins. Known from a single collection made in 2010. All other historical records of this taxon have proved to be *L. pratensis* var. *pratensis*, which is probably what this is as well. *André 23040* (UCR). Not yet examined.
- LUPINUS PRATENSIS A. Heller var. PRATENSIS. Perennial. Common in meadows, seeps, creek margins, riparian woodland. *Purdy 452*.
- OXYTROPIS BOREALIS DC. var. VISCIDA (Nutt.) S.L. Welsh. Perennial. Occasional in alpine fellfields and slopes. Relatively common on metamorphics and calcareous substrates of Coyote Ridge, occasional elsewhere. *Purdy 92*.

- †OXYTROPIS PARRYI A. Gray. CRPR 4.3. Perennial. Occasional in alpine fellfields, slopes, and scree. Most often on calcareous substrates. *Purdy 127, Howell 24024 (CAS), 24115 (CAS, UC), Raven (CAS, UC), Larson s.n., 19 July 1972 (CAS), Taylor 6546 (JEPS).*
- OXYTROPIS PARRYI A. Gray × O. BOREALIS DC. var. VISCIDA (Nutt.) S.L. Welsh. Perennial. Rare in calcareous scree and alpine slopes. Putative *Oxytropis* hybrids observed in two locations circa Lookout Mountain where both parent taxa co-occur. Similar plants have been observed around Sheep Mtn in the White Mountains by Jim Morefield and Steve Matson. See specimen label for additional notes. *Purdy 137.*
- TRIFOLIUM ANDERSONII A. Gray subsp. BEATLEYAE J.M. Gillett. Perennial. Uncommon in sagebrush scrub, perennial creeks, alpine fellfields and slopes. Seasonally moist areas. *Purdy 29.*
- †TRIFOLIUM KINGII S. Watson subsp. DEDECKERAE (J.M. Gillett) D. Heller. CRPR 1B.3. Perennial. Rare on rocky outcrops. Known from a single collection on exposed granitic outcrop overlooking the Owens Valley, 3006 m (9862 ft). *Purdy 1020.*
- TRIFOLIUM MONANTHUM A. Gray subsp. MONANTHUM. Perennial. Occasional in wet meadows, seeps, creek margins. *Purdy 181.*
- *TRIFOLIUM PRATENSE L. Perennial. Rare in riparian woodland, creek margins. Known from a single population at first crossing of Coyote Valley Road and Coyote Creek. *Purdy 1208.*
- *TRIFOLIUM REPENS L. Perennial. Rare in riparian woodland, creek margins. Known from a single population at first crossing of Coyote Valley Road and Coyote Creek. *Purdy 1207.*
- TRIFOLIUM WORMSKIOLDII Lehm. Perennial. Uncommon in wet meadows, creek margins. In sunny meadows exposed to cattle grazing. Rawson and Onion creek watersheds. *Purdy 687.*
- VICIA AMERICANA Muhl. ex Willd. subsp. AMERICANA. Perennial. Rare in wet meadows. Known from a single meadow in Rawson Creek watershed. *Purdy 692.*

GENTIANACEAE

- FRASERA PUBERULENTA Davidson. Perennial. Uncommon in sagebrush scrub, DG slopes, subalpine talus. *Purdy 799.*
- GENTIANA NEWBERRYI A. Gray var. TIOGANA (A. Heller) J.S. Pringle. Perennial. Occasional in wet meadows, creek margins, alpine fellfields. *Purdy 400.*
- GENTIANELLA AMARELLA (L.) Börner subsp. ACUTA (Michx.) J.M. Gillett. Perennial. Uncommon in wet meadows, pond margins. On drying margins of ponds and meadows. *Purdy 489.*
- GENTIANOPSIS HOLOPETALA (A. Gray) H.H. Iltis. Perennial. Occasional in wet meadows, seeps, creek margins. Normally in moist soil and vegetation. *Purdy 1282.*
- GENTIANOPSIS SIMPLEX (A. Gray) H.H. Iltis. Perennial. Rare in wet meadows of lower Baker Creek. Known from a single population. *Purdy 1328.*

GROSSULARIACEAE

- RIBES CEREUM Douglas var. CEREUM. Shrub. Common in sagebrush scrub, rock outcrops, alpine slopes and ridges. In open rocky areas throughout the study area. *Purdy 121.*
- RIBES INERME Rydb. var. INERME. Shrub. Rare in aspen groves. Known from a single site in large aspen grove, Rawson Creek watershed. *Purdy 1270.*
- RIBES VELUTINUM Greene. Shrub. Uncommon in aspen groves, riparian woodland. Lower Coyote Creek along Coyote Valley Road. *Purdy 845.*

HALORAGACEAE

- MYRIOPHYLLUM SIBIRICUM Kom. Aquatic perennial. Rare in water of subalpine wetland. Rooted in muddy shallows of pond, Bake Creek watershed. Growing with *Utricularia minor*. *Purdy 491.*

HYDRANGEACEAE

- †JAMESIA AMERICANA Torr. & A. Gray var. ROSEA Purpus ex C.K. Schneid. CRPR 4.3. Shrub. Occasional on exposed rock outcrops above 3100 m (10,200 ft). Granitic and metamorphic substrates. *Purdy 269, 740, 1030, 1224.*

HYDROPHYLLACEAE

HESPEROCHIRON NANUS (Lindl.) Greene. Perennial. Rare in disturbed creek margins and wet meadows along Cow Creek. *Purdy 113*.

PHACELIA BICOLOR Torr. ex S. Watson. Annual. Uncommon in sagebrush scrub, dry creek beds, volcanic outcrops. *Purdy 1085*.

PHACELIA HASTATA Douglas ex Lehm. var. COMPACTA (Brand) Cronquist. Perennial. Occasional in sagebrush scrub, perennial creeks, alpine slopes and ridges. *Purdy 1175*.

PHACELIA RAMOSISSIMA Douglas ex Lehm. Perennial. Uncommon in sagebrush scrub, limber pine forest, aspen groves. *Purdy 1089*.

HYPERICACEAE

HYPERICUM ANAGALLOIDES Cham. & Schtdl. Annual (perennial). Rare in seeps. Known from a single seep heavily trampled by cattle in Baker Creek watershed. *Purdy 1332*.

LAMIACEAE

MONARDELLA LINOIDES A. Gray subsp. SIERRAE Elvin & A.C. Sanders. Perennial. Uncommon in sagebrush scrub. *Purdy 1100*.

MONARDELLA ODORATISSIMA Benth. subsp. GLAUCA (Greene) Epling. Perennial. Common in sagebrush scrub, alpine fellfields, slopes, talus, and rock outcrops. Often in open rocky soil. *Purdy 1151*.

◆MONARDELLA ODORATISSIMA Benth. subsp. PALLIDA (A. Heller) Epling × subsp. GLAUCA (Greene) Epling. Perennial. Rare in alpine fellfields. Known from a single collection in 1947. CAS duplicate annotated here by A.C. Sanders, one of the authors for the *Monardella* treatment in the Jepson eFlora (Jepson Flora Project 2022). These two taxa are known to intergrade along the Sierra Nevada crest. *Howell 24020* (CAS, RSA).

STACHYS ALBENS A. Gray. Perennial. Rare in seeps. Known from drying margins of a single seep in Onion Creek watershed. *Purdy 1080*.

LENTIBULARIACEAE

†UTRICULARIA MINOR L. CRPR 4.2. Aquatic annual. Rare in water of subalpine wetland. Floating at or near surface around *Carex* at edge of pond. Baker Creek watershed. First record in Inyo County, but ID is tentative and of nonreproductive material. Specimen warrants further study and/or expert confirmation. *Purdy 490*.

LINACEAE

LINUM LEWISII Pursh var. LEWISII. Perennial. Uncommon in meadows and road margins along Coyote Valley Road around 2750 m (9000 ft). *Purdy 138*.

LOASACEAE

◆MENTZELIA CONGESTA Torr. & A. Gray. Annual. Rare. Known from a single Peter Raven collection in 1950, vague locality info: "Coyote Ridge... 10,000 ft." Poor material to name, could represent a young or unusually compact *M. montana* specimen. *Raven 166* (CAS).

MENTZELIA LAEVICAULIS (Douglas ex Hook.) Torr. & A. Gray. Perennial. Uncommon on receding lake shores, mine talings, alpine scree. Found in loose rocky soil in disturbed habitats. Known only from three localities. *Purdy 432*.

MENTZELIA MONTANA (Davidson) Davidson & Moxley. Annual. Uncommon in sagebrush scrub, dry creek beds. In open sandy soil below 2900 m (9500 ft). *Purdy 937*.

MALVACEAE

SIDALCEA OREGANA (Torr. & A. Gray) A. Gray subsp. SPICATA (Regel) C.L. Hitchc. Perennial. Rare in seeps. Known from a single collection. Onion Creek watershed, 2878 m (9473 ft). *Purdy 1065*.
SPHAERALCEA AMBIGUA A. Gray var. AMBIGUA. Subshrub. Uncommon in sagebrush scrub. Coyote Creek watershed below 2750 m (9000 ft). *Purdy 851*.

MONTIACEAE

◆CALYPTRIDUM ROSEUM S. Watson. Annual. Rare in meadows of Coyote Flat. "Open dry grassland." Known from a single collection in 1927. *Duran 1777* (UC).
CALYPTRIDUM UMBELLATUM (Torr.) Greene. Perennial. Occasional in sandy sagebrush flats, receding lake shores, alpine ridges. Generally in sandy open soil. *Purdy 155*.
LEWISIA GLANDULOSA (Rydb.) S. Clay. Perennial. Rare in alpine fellfields and slopes. Seasonally moist areas above 3500 m (11,500 ft). *Purdy 387*.
LEWISIA PYGMAEA (A. Gray) B.L. Rob. Perennial. Common in sagebrush scrub, wet meadows, perennial creek beds, alpine fellfields. Seasonally moist areas. *Purdy 108*.
MONTIA CHAMISSOI (Spreng.) Greene. Perennial. Common in wet meadows, seeps, creek margins. *Purdy 112*.

NAMACEAE

NAMA ROTHROCKII A. Gray. Perennial. Rare in sagebrush scrub. Documented only once during this study in the 2002 Piper Fire burn scar, but also known from one Peter Raven collection from 1950. *Purdy 1095*.

ONAGRACEAE

CAMISSONIA PUSILLA P.H. Raven. Annual. Rare in disturbed road margin, sagebrush scrub. Small population known exclusively from small patch of cattle disturbed soil along dirt road, Onion Creek watershed. Possibly a waif population introduced by cattle. *Purdy 1086*.
CHAMERION ANGUSTIFOLIUM L. subsp. CIRCUMVAGUM. Perennial. Locally common in creek and lake margins in Green and Brown lakes basin. One specimen (*Raven 247* [CAS, RSA]) included here that is somewhat intermediate with *Chamerion latifolium* and may represent a hybrid of the two species. *Purdy 382*.
EPILOBIUM ANAGALLIDIFOLIUM Lam. Perennial. Uncommon in creek margins and wet meadows above 3200 m (10,500 ft). *Purdy 363*.
◆EPILOBIUM CILIATUM Raf. subsp. CILIATUM. Perennial. Rare on creek margins. Coyote Creek, 2683 m (8800 ft). Known from single collection in 1968 annotated by Peter C. Hoch, author of the *Epilobium* treatment in the Jepson eFlora (Jepson Flora Project 2022) and FNA (1993+). *DeDecker 1945* (RSA).
EPILOBIUM CILIATUM Raf. subsp. GLANDULOSUM (Lehm.) Hoch & P.H. Raven. Perennial. Occasional in seeps, wet meadows, creek margins. Below 3000 m (9850 ft). *Purdy 439*.
EPILOBIUM OBCORDATUM A. Gray. Perennial. Occasional in perennial creek beds, alpine talus and outcrops. In moist microclimates, east and north aspects. *Purdy 281*.
GAYOPHYTUM DIFFUSUM Torr. & A. Gray subsp. PARVIFLORUM H. Lewis & Szweyk. Annual. Occasional in creek margins, receding lake shores, alpine fellfields. In open sandy soil. *Purdy 1132b*.
GAYOPHYTUM RACEMOSUM Torr. & A. Gray. Annual. Uncommon in receding lake shores, alpine fellfields and slopes. *Purdy 503*.
GAYOPHYTUM RAMOSISSIMUM Torr. & A. Gray. Annual. Uncommon in road margins, sagebrush scrub. Known only from Coyote Valley Road below 2700 m (8860 ft). *Purdy 1203*.

OROBANCHACEAE

APHYLLON CORYMBOSUM (Rydb.) A.C. Schneid. Perennial. Rare in sagebrush scrub. *Artemisia tridentata* host inferred from single collection. Onion Creek watershed, 2879 m (9446 ft). *Purdy 1105*.
APHYLLON FASCICULATUM (Nutt.) Torr. & A. Gray. Perennial. Rare in sagebrush scrub, sparsely vegetated alpine ridges. *Eriogonum* host. *Purdy 278*.
CASTILLEJA APPLIGATEI Fernald var. BREWERI (Fernald) N. H. Holmgren. Perennial. Common in sagebrush scrub throughout the study area. Some plants approaching var. *pinetorum* in corolla length. *Purdy 272*.

CASTILLEJA APPLIGATEI Fernald var. PINETORUM (Fernald) N. H. Holmgren. Perennial. Uncommon in sagebrush scrub. *Purdy 998.*

CASTILLEJA CHROMOSA A. Nelson. Perennial. Uncommon in sagebrush scrub. Exposed open slopes of relatively low shrub cover below 3050 m (10,000 ft). *Purdy 802.*

CASTILLEJA LEMMONII A. Gray. Perennial. Uncommon in wet meadows, lake margins. Green and Brown lakes basin and Baker Creek watershed. *Purdy 351.*

CASTILLEJA LINARIIFOLIA Benth. Perennial. Occasional in sagebrush scrub. *Purdy 246.*

CASTILLEJA MINIATA Douglas ex Hook. subsp. MINIATA. Perennial. Occasional in wet meadows, creek margins, riparian woodland. *Purdy 417.*

CASTILLEJA NANA Eastw. Perennial. Locally common in alpine fellfields. Occasional in sagebrush scrub and whitebark pine forest. *Purdy 21.*

CORDYLANTHUS KINGII S. Watson subsp. HELLERI (Ferris) T.I. Chuang & Heckard. Annual. Uncommon in sagebrush scrub below 3200 m (10,500 ft). *Purdy 544.*

ORTHOCARPUS LUTEUS Nutt. Annual. Rare in wet meadow of Rawson Creek watershed. Known from a single locality. First record in Inyo County. 2616 m (8582 ft). *Purdy 682.*

PEDICULARIS ATTOLLENS A. Gray. Perennial. Locally common in wet meadows of Green and Brown lakes basin and alpine fellfields around the Hunchback. *Purdy 20.*

PAPAVERACEAE

ARGEMONE MUNITA Durand & Hilg. Perennial (annual). Rare in sagebrush scrub of 2002 Piper Fire burn scar. *Purdy 1093.*

PARNASSIACEAE

PARNASSIA PALUSTRIS L. Perennial. Occasional in wet meadows, seeps, and creek margins of Ford Flat and Rawson Creek watershed. Many plants and populations are intermediate with *P. parviflora*, which is also true of *Parnassia* in the White Mountains (Jim Morefield, pers. comm.). However, plants on average trend towards *P. palustris*, so that more conservative name is being applied here. These intermediate populations may warrant further study. *Purdy 456.*

PHRYMACEAE

ERYTHRANTHE BREWERI (Greene) G.L. Nesom & N.S. Fraga. Annual. Uncommon on receding lake shores, perennial pond margins. Often in mixed populations with *E. suksdorfii* in open DG soil. *Purdy 500.*

ERYTHRANTHE FLORIBUNDA (Lindl.) G.L. Nesom. Perennial. Rare in seeps. Known from a single collection in a muddy cow trampled seep. Onion Creek watershed, 2876 m (9437 ft). *Purdy 1374.*

ERYTHRANTHE GUTTATA (DC.) G.L. Nesom. Perennial. Uncommon in riparian woodland, seeps, creek margins. Below 2900 m (9500 ft). *Purdy 1106.*

ERYTHRANTHE PRIMULOIDES (Benth.) G.L. Nesom & N.S. Fraga. Annual. Common in wet meadows, seeps, creek margins. One of the most common and diagnostic species of mesic habitats throughout the study area. *Purdy 822.*

ERYTHRANTHE SUKSDORFII (A. Gray) N.S. Fraga. Annual. Locally common on receding lake shores, perennial pond margins. *Purdy 171.*

ERYTHRANTHE TILINGII (Regel) G.L. Nesom. Perennial. Common in seeps, wet meadows. Generally above 3050 m (10,000 ft). *Purdy 960.*

PLANTAGINACEAE

CALLITRICHE PALUSTRIS L. Aquatic annual (perennial). Rare in ponds. Known from a single collection in perennial pond which drains into Green Lake. Growing completely submerged in water. *Purdy 225.*

HIPPURIS VULGARIS L. Perennial. Rare in muddy margins of subalpine marsh. Known from a single locality in Baker Creek watershed. *Purdy 1340.*

PENSTEMON DAVIDSONII Greene var. DAVIDSONII. Perennial. Occasional on alpine slopes and ridges. Open DG soil. *Purdy 295.*

PENSTEMON HETERODOXUS A. Gray var. CEPHALOPHORUS (Greene) N.H. Holmgren. Perennial. Uncommon in perennial creek beds, alpine slopes. Seasonally moist places. *Purdy 240.*

PENSTEMON HETERODOXUS A. Gray var. HETERODOXUS. Perennial. Occasional in whitebark pine forest, alpine slopes and drainages. Seasonally moist places. *Purdy 55.*

†PENSTEMON PAPILLATUS J.T. Howell. CRPR 4.3. Perennial. Uncommon in sagebrush scrub, limber pine forest. Generally in open DG soil. 2742-2964 m (8996-9725 ft). *Purdy 887, 926.*

PENSTEMON PATENS (M.E. Jones) N.H. Holmgren. Perennial. Rare in sagebrush scrub on ridgeline separating Baker and Big Pine creek watersheds. *Purdy 1000.*

PENSTEMON ROSTRIFLORUS Kellogg. Perennial. Common in sagebrush scrub, limber pine forest, rock outcrops. Open rocky areas. *Purdy 925.*

PENSTEMON RYDBERGII A. Nelson var. OREOCHARIS (Greene) N.H. Holmgren. Perennial. Locally common in wet meadows, seeps, creek margins. *Purdy 820.*

PENSTEMON SPECIOSUS Lindl. Perennial. Occasional in sagebrush scrub, limber pine forest, whitebark pine forest. *Purdy 991.*

VERONICA AMERICANA Schwein. ex Benth. Perennial. Locally common in seeps, creeks, wet meadows. *Purdy 471.*

VERONICA PEREGRINA L. subsp. XALAPENSIS (Kunth) Pennell. Annual. Rare in disturbed muddy flats of meadows/creek margins. Known from a single collection in muddy flats adjacent East Fork of Coyote Creek. This area heavily grazed and impacted by cattle. *Purdy 1290.*

POLEMONIACEAE

COLLOMIA LINEARIS Nutt. Annual. Rare in meadows. Known from a single collection in cow trail of Ford Flat, Rawson Creek watershed. *Purdy 921.*

ERIASTRUM WILCOXII (A. Nelson) H. Mason. Annual. Uncommon in disturbed road margins below 2700 m (8860 ft). *Purdy 1206.*

GILIA CANA (M.E. Jones) A. Heller subsp. CANA. Annual. Uncommon in sagebrush scrub below 2900 m (9500 ft). *Purdy 883.*

GYMNOSTERIS PARVULA A. Heller. Annual. Rare in disturbed soil of meadows around Cow Creek. Coyote Flat, 3006 m (9861 ft). *Purdy 111.*

IPOMOPSIS AGGREGATA (Pursh) V.E. Grant subsp. BRIDGESII (A. Gray) V.E. Grant & A.D. Grant. Perennial. Occasional in sagebrush scrub, rocky alpine slopes and scree. *Purdy 257.*

IPOMOPSIS TENUITUBA (Rydb.) V.E. Grant. Perennial. Uncommon in sagebrush scrub and road margins along Coyote Valley Road below 2800 m (9200 ft). *Purdy 145.*

LEPTOSIPHON NUTTALLII (A. Gray) J.M. Porter & L.A. Johnson subsp. PUBESCENS (R. Patt.) J.M. Porter & L.A. Johnson. Perennial. Common to occasional in sagebrush scrub, whitebark pine forest, alpine slopes and drainages. Easily confused with *L. pachyphyllus* and occasionally found growing together. *Purdy 57.*

LEPTOSIPHON PACHYPHYLLUS (R. Patt.) J.M. Porter & L.A. Johnson. Perennial. Common to occasional in sagebrush scrub, whitebark pine forest, alpine slopes and drainages. Easily confused with *L. nuttallii* subsp. *pubescens* and occasionally found growing together. *Purdy 1028.*

LINANTHUS PUNGENS (Torr.) J.M. Porter & L.A. Johnson subsp. PULCHRIFLORUS. Subshrub (perennial). Common in sagebrush scrub, rock outcrops, alpine slopes, ridges, and talus. Dry rocky areas throughout the study area. *Purdy 152.*

MICROSTERIS GRACILIS (Hook.) Greene. Annual. Rare in disturbed road margins. Known from a single collection in disturbed turnout along Coyote Valley Road. 2700 m (8850 ft). *Purdy 859.*

NAVARRETIA BREWERI (A. Gray) Greene. Annual. Rare in sagebrush scrub. Only observed twice within study area. Not collected due to local rarity. Photo voucher. *Purdy 956.5.*

PHLOX CONDENSATA (A. Gray) E.E. Nelson. Perennial. Common in sagebrush scrub, alpine fellfields and slopes. Some plants approaching *P. pulvinata*, as described in the Jepson eFlora (Jepson Flora Project 2022). *Purdy 84.*

PHLOX STANSBURYI (Torr.) A. Heller. Perennial. Rare in road margins, sagebrush scrub. Known from a single collection in open soil along FS road 32E307, Bishop Creek watershed. *Purdy 801.*

POLEMONIUM EXIMIUM Greene. Perennial. Uncommon in alpine talus and scree above 3800 m (12,500 ft). *Purdy 1046.*

POLEMONIUM OCCIDENTALE Greene. Perennial. Occasional in seeps, wet meadows. In moist shady sites. *Purdy 140.*

POLYGONACEAE

ERIOGONUM BAILEYI S. Watson var. BAILEYI. Annual. Uncommon in road margins, sagebrush scrub. In open sandy soil below 2830 m (9300 ft). *Purdy 531.*

ERIOGONUM CAESPITOSUM Nutt. Perennial. Locally common in sagebrush scrub, alpine fellfields and slopes. Generally in open sandy soil. *Purdy 85.*

ERIOGONUM LATENS Jeps. Perennial. Occasional in limber pine forest, rock outcrops, ridges, and peaks. Generally in exposed rocky areas, 3006-3431 m (9862-11257 ft). *Purdy 1017.*

ERIOGONUM LOBBII Torr. & A. Gray. Perennial. Occasional in whitebark pine forest, alpine slopes and drainages. In open DG soil. *Purdy 630.*

ERIOGONUM MICROTHECA Nutt. var. AMBIGUUM (M.E. Jones) Reveal. Perennial. Common in sagebrush scrub, rock outcrops and ridges. Sometimes co-dominant with *Artemisia tridentata* species in sagebrush scrub. *Purdy 1001.*

ERIOGONUM NUDUM Benth. var. SCAPIGERUM (Eastw.) Jeps. Perennial. Occasional in sagebrush scrub, alpine slopes and drainages. In open rocky areas, often on metamorphic substrates. *Purdy 408.*

ERIOGONUM OVALIFOLIUM Nutt. var. NIVALE (Coville) M.E. Jones. Perennial. Common in whitebark pine forest, perennial creek beds, alpine fellfields and slopes. *Purdy 204.*

◆ERIOGONUM OVALIFOLIUM Nutt. var. PURPUREUM (Nutt.) Durand. Perennial. Rare in creek margins. Known from a single collection in 2010, "Peterson Mill site, near creek." *André 23053* (UCR). Not yet examined.

ERIOGONUM ROSENSE A. Nelson & P.B. Kenn. var. ROSENSE. Perennial. Locally common in alpine fellfields, outcrops, and slopes. Generally on calcareous substrates. *Purdy 230.*

ERIOGONUM SPERGULINUM A. Gray var. REDDINGIANUM (M.E. Jones) J.T. Howell. Annual. Locally common in sagebrush scrub. Open sandy soil and dry washes. *Purdy 585.*

ERIOGONUM UMBELLATUM Torr. var. CANIFOLIUM Reveal. Perennial. Rare in sagebrush scrub on ridgeline separating Baker and Big Pine creeks. Northern most occurrence on CCH1/2 (2022). *Purdy 992.*

ERIOGONUM UMBELLATUM Torr. var. NEVADENSE Gand. Perennial. Common in sagebrush scrub. *Purdy 530.*

ERIOGONUM WRIGHTII Benth. var. SUBSCAPOSUM S. Watson. Perennial. Locally common in sagebrush scrub. Dry DG slopes. *Purdy 619.*

OXYRIA DIGYNA (L.) Hill. Perennial. Locally common in alpine talus, ridges, and outcrops. *Purdy 665.*

OXYTHECA DENDROIDEA Nutt. subsp. DENDROIDEA. Annual. Rare in road margins, sagebrush scrub. Known from a single collection along Forest Service road 32E309, Rawson Creek watershed. *Purdy 702.*

*POLYGONUM AVICULARE L. subsp. AVICULARE. Annual. Uncommon in disturbed road margins, sagebrush scrub. In disturbed turnouts along Coyote Valley Road below 2750 m (9000 ft). Plants somewhat intermediate with *P. aviculare* subsp. *depressum*. *Purdy 855.*

*POLYGONUM AVICULARE L. subsp. DEPRESSUM (Meisn.) Arcang. Annual. Uncommon in disturbed road margins and muddy flats. Some plants intermediate with *P. aviculare* subsp. *aviculare*. *Purdy 1291.*

POLYGONUM POLYGALOIDES Meisn. subsp. KELLOGGII (Greene) J.C. Hickman. Annual. Rare in sagebrush scrub. In moist soil of small depression. *Purdy 954.*

POLYGONUM SAWATCHENSE Small subsp. SAWATCHENSE. Annual. Uncommon in meadows, creek banks, perennial ponds. *Purdy 923.*

RUMEX CALIFORNICUS Rech. f. Perennial. Locally common in wet meadows, creek margins. *Purdy 358.*

RUMEX PAUCIFOLIUS Nutt. Perennial. Occasional in wet meadows, alpine fellfields, slopes, and depressions. In seasonally wet places. *Purdy 54.*

RUMEX TRIANGULIVALVIS (Danser) Rech. f. Perennial. Uncommon in seeps, creek margins. *Purdy 1073.*

PRIMULACEAE

ANDROSACE SEPTENTRIONALIS L. Annual. Uncommon in alpine fellfields and slopes. *Purdy 52.*

PRIMULA FRAGRANS Mast & Reveal. Perennial. Common in wet meadows, seeps, and creek margins above 3000 m (9850 ft). *Purdy 823.*

PRIMULA SUFFRUTESCENS A. Gray. Perennial. Occasional on alpine slopes, ridges, and talus. *Purdy 296.*

PRIMULA TETRANDA (Suksd. ex Greene) Mast & Reveal. Perennial. Uncommon in seeps, creek margins. Rawson Creek watershed below 2750 m (9000 ft). *Purdy 534.*

RANUNCULACEAE

ACONITUM COLUMBIANUM Nutt. subsp. COLUMBIANUM. Perennial. Locally common in riparian woodland, creek margins. *Purdy 438.*

AQUILEGIA FORMOSA Fisch. ex DC. Perennial. Common in seeps, creek margins. Near running water. *Purdy 699.*

AQUILEGIA PUBESCENS Coville. Perennial. Common in alpine to subalpine talus and rock outcrops. *Purdy 375.*

DELPHINIUM POLYCLADON Eastw. Perennial. Occasional in wet meadows, creek margins, alpine drainages and dry creek beds. *Purdy 416.*

RANUNCULUS ALISMIFOLIUS Geyer ex Benth. var. HARTWEGII (Greene) Jeps. Perennial. Rare in disturbed wet meadows adjacent Cow Creek, 3006 m (9861 ft). Too far south and too high in elevation for this taxon based on description in Jepson eFlora (Jepson Flora Project 2022), but morphology strongly points here. *Ranunculus alismifolius* var. *alismellus* would be much more likely based on geography, however, leaf shape is wrong. Potential first record in Inyo County, but specimen warrants further study and/or expert confirmation. *Purdy 106.*

RANUNCULUS AQUATILIS L. var. DIFFUSUS With. Aquatic perennial. Rare in shallow water of Bluff Lake. Green and Brown lakes basin. *Purdy 343.*

RANUNCULUS CYMBALARIA Pursh. Perennial. Rare in disturbed muddy flats of meadows/creek margins. Known from a single collection in muddy flats adjacent East Fork of Coyote Creek. This area heavily grazed and impacted by cattle. *Purdy 1292.*

RANUNCULUS ESCHSCHOLTZII Schltld. var. OXYNOTUS (A. Gray) Jeps. Perennial. Occasional on rocky alpine slopes. In sheltered rocky crevices of north and east aspects. *Purdy 231.*

†THALICTRUM ALPINUM L. CRPR 4.3. Perennial. Occasional common in wet meadows and seeps of Rawson Creek watershed. Particularly common in Ford Flat. New record for the southern High Sierra Nevada Jepson bioregion. *Purdy 472, 910, 940.*

THALICTRUM SPARSIFLORUM Turcz. ex Fisch. & C.A. Mey. Perennial. Uncommon in wet meadows, creek margins. *Purdy 867.*

RHAMNACEAE

CEANOTHUS CORDULATUS Kellogg. Shrub. Locally common in open sagebrush scrub and burn scar of 2002 Piper Fire. Otherwise not found within the study area. *Purdy 1091.*

ROSACEAE

◆AMELANCHIER ALNIFOLIA (Nutt.) Nutt. ex M. Roem. var. PUMILA (Torr. & A. Gray) C.K. Schneid. Shrub. Uncommon on creek and lake margins. Known only from two historical collections, both are listed here. *Buckalew s.n.*, 18 July 1958 (SJSU), *Larson s.n.*, 21 July 1971 (CAS).

CERCOCARPUS LEDIFOLIUS Nutt. var. INTERMONTANUS N.H. Holmgren. Small tree (shrub). Common in sagebrush scrub, limber pine forest, whitebark pine forest, rocky outcrops. Sometimes forming dense stands to the exclusion of other woody tree species. Dry rocky areas. *Purdy 784.*

CHAMAEBATIARIA MILLEFOLIUM (Torr.) Maxim. Shrub. Occasional in sagebrush scrub. On granitic outcrops and other dry rocky areas. *Purdy 521.*

DRYMOCALLIS LACTEA (Greene) Rydb. var. LACTEA. Perennial. Occasional in wet meadows, creek and lake margins. *Purdy 1339.*

GEUM MACROPHYLLUM Willd. var. PERINCISUM (Rydb.) Raup. Perennial. Rare in lodgepole pine forest, shaded creek margins. Known from a single population in Baker Creek watershed, 2916 m (9567 ft). *Purdy 1324.*

HOLODISCUS DISCOLOR (Pursh) Maxim. var. MICROPHYLLUS (Rydb.) Jeps. Shrub. Occasional in sagebrush scrub, subalpine ridges. Exposed rocky areas. *Purdy 1219.*

HORKELIELLA CONGDONIS (Rydb.) Rydb. Perennial. Occasional in sagebrush scrub. *Purdy 1104.*

IVESIA LYCOPODIOIDES A. Gray var. MEGALOPETALA (Rydb.) Ertter & Reveal. Perennial. Uncommon in meadows, lodgepole pine forest. Baker Creek watershed. *Purdy 105.*

IVESIA LYCOPODIOIDES A. Gray var. SCANDULARIS (Rydb.) Ertter & Reveal. Perennial. Locally common in wet meadows, lake margins, alpine depressions. *Purdy 210.*

IVESIA MUIRII A. Gray. Perennial. Occasional in whitebark pine forest, alpine fellfields. On open rocky soils and DG slopes. *Purdy 13.*

IVESIA SAXOSA (Lemmon ex Greene) Ertter. Perennial. Rare in sheltered cracks of granitic outcrops. Known from a single locality in the Rawson Creek watershed, 2721 m (8928). *Purdy 520.*

IVESIA SHOCKLEYI S. Watson var. SHOCKLEYI. Perennial. Common in whitebark pine forest, alpine fellfields, slopes, and ridges. *Purdy 125.*

POTENTILLA BIENNIS Greene. Annual (biennial). Locally common on receding lake shores, occasional in meadows. *Purdy 1311.*

POTENTILLA BREWERI S. Watson. Perennial. Occasional in sagebrush scrub, perennial creek beds, alpine fellfields. *Purdy 290.*

POTENTILLA DRUMMONDII Lehm. Perennial. Occasional in meadows, springs, creek margins, alpine slopes. In seasonally moist areas. *Purdy 1011.*

POTENTILLA GLAUCOPHYLLA Lehm. var. GLAUCOPHYLLA. Perennial. Uncommon in meadows of the Green and Brown lakes basin. *Purdy 983.*

POTENTILLA GRACILIS Hook. var. ELMERI (Rydb.) Jeps. Perennial. Uncommon in wet meadows, seeps, creek margins. Some plants intermediate with *P. gracilis* var. *fastigiata*. *Purdy 142.*

POTENTILLA GRACILIS Hook. var. FASTIGIATA (Nutt.) S. Watson. Perennial. Common in wet meadows, seeps, creek margins throughout the study area. *Purdy 987.*

POTENTILLA JEPSONII Ertter. Perennial. Rare in alpine fellfields. Known from a single collection on gently sloping plateau north of the Hunchback. *Purdy 1232.*

†POTENTILLA MOREFIELDII Ertter. CRPR 1B.3. Perennial. Occasional in alpine fellfields around the Hunchback. The only known location for this species outside alpine areas of the White Mountains. *Purdy 1233, Taylor 6554 (UC), 15413 (RENO, JEPS).*

POTENTILLA PENNSYLVANICA L. Perennial. Common in alpine fellfields and rock outcrops. *Purdy 305.*

POTENTILLA PSEUDOSERICEA Rydb. Perennial. Occasional in alpine fellfields and slopes. *Purdy 180.*

PURSHIA TRIDENTATA (Pursh) DC. var. TRIDENTATA. Shrub. Common to co-dominant in sagebrush scrub, occasional in whitebark pine forest. *Purdy 187.*

ROSA WOODSII Lindl. subsp. GRATISSIMA (Greene) W.H. Lewis & Ertter. Shrub. Locally common in riparian woodland, aspen groves, creek margins. *Purdy 538.*

SIBBALDIA PROCUMBENS L. Perennial. Uncommon in alpine fellfields and slopes. Seasonally moist areas. *Purdy 291.*

RUBIACEAE

GALIUM HYPOTRICHUM A. Gray subsp. HYPOTRICHUM. Perennial. Occasional in subalpine and alpine rocky outcrops and slopes. *Purdy 61.*

◆GALIUM HYPOTRICHUM A. Gray subsp. INYOENSE Dempster & Ehrend. Perennial. Uncommon in sagebrush scrub, open rocky areas. Known only from two collections from 1950 and 2010. *Raven 173 (CAS, UC).*

GALIUM HYPOTRICHUM A. Gray subsp. SUBALPINUM (Hilend & J.T. Howell) Ehrend. Perennial. Occasional in sagebrush scrub, whitebark pine forest, rock outcrops. *Purdy 214.*

GALIUM MATTHEWSII A. Gray. Perennial. Rare in sagebrush scrub. Known from a single collection in dry granitic outcrops, Rawson Creek watershed. 2712 m (8928 ft). *Purdy 524.*

SALICACEAE

POPULUS TREMULOIDES Michx. Tree. Locally common (dominant) in riparian woodland and aspen groves. Sometimes forming large shrubby stands on east facing slopes. Aspen groves in areas of permanent or seasonal moisture. *Purdy 540.*

SALIX BOOTHII Dorn. Shrub. Rare on subalpine lake shores. Known from a single collection around Hidden Lake, Rawson Creek watershed. 3270 m (10,725 ft). *Purdy 507.*

SALIX EASTWOODIAE A. Heller. Shrub. Occasional in wet meadows, creek and lake margins. Locally common in the Green and Brown lakes basin. 2935-3292 m (9629-10,800 ft). *Purdy 984.*

SALIX EXIGUA Nutt. var. EXIGUA. Shrub. Uncommon on creek margins. Forming dense thickets along Rawson Creek. 2690-2847 m (8827-9339 ft). *Purdy 908.*

SALIX GEYERIANA Andersson. Shrub. Common in wet meadows, creek and lake margins. 2612-3287 m (8570-10784 ft). *Purdy 198b.*

SALIX LUTEA Nutt. Shrub. Common in meadows and creek margins below 3000 m (2850 ft). *Purdy 546.*

SALIX ORESTERA C.K. Schneid. Shrub. Common in meadows, seeps, creek/lake margins, alpine slopes and drainages. The most abundant and widespread *Salix* species within the study area. 2916-3554 m (9567-11,659 ft). *Purdy 985*.

SALIX PETROPHILA Rydb. Shrub. Uncommon on moist margins of lakes and wetlands near treeline. Baker Creek watershed and Green and Brown lakes basin. 3370-3424 m (11,056-11,235 ft). *Purdy 360*.

SALIX PLANIFOLIA Pursh. Shrub. Occasional in wet meadows and creek margins of Green and Brown lakes basin. 3209-3424 m (10,528-11,235 ft). *Purdy 986*.

SAPINDACEAE

◆ACER GLABRUM Torr. var. DIFFUSUM (Greene) Smiley. Small tree (shrub). Rare. "Coyote Creek, SW of Bishop." Known from a single collection in 1971. *Larson s.n.*, 21 July 1971 (CAS).

SAXIFRAGACEAE

HEUCHERA RUBESCENS Torr. Perennial. Rare on calcareous outcrops. Known from a single collection on ridge overlooking the South Fork of Bishop Creek. 3318 m (10,886 ft). *Purdy 749*.

LITHOPHRAGMA GLABRUM Nutt. Perennial. Rare in perennial creek beds, alpine drainages. Known from two localities around the headwaters of the West Fork of Coyote Creek. *Purdy 817*.

MICRANTHES APRICA (Greene) Small. Perennial. Uncommon in alpine fellfields around the Hunchback. *Purdy 16*.

SAXIFRAGA HYPERBOREA R. Br. Perennial. Rare in granitic alpine talus south of Green Lake, ca. 3500 m (10,900 ft). *Purdy 381*.

SCROPHULARIACEAE

LIMOSELLA AQUATICA L. Annual. Uncommon in seeps, wet meadows. Known from one collection for this study and one historical collection. Contemporary collection from a muddy cow trampled seep. Onion Creek watershed, 2876 m (9437 ft). *Purdy 1374*.

SCROPHULARIA DESERTORUM (Munz) R.J. Shaw. Perennial. Uncommon in sagebrush scrub. On sandy DG slopes in the Rawson Creek watershed, below 2900 m (9500 ft). *Purdy 876*.

URTICACEAE

URTICA DIOICA L. subsp. HOLOSERICEA (Nutt.) Thorne. Perennial. Occasional in wet meadows, receding lake shores. *Purdy 1174*.

VIOLACEAE

VIOLA MACLOSKEYI F.E. Lloyd. Perennial. Occasional in wet flowing meadows, seeps, creek margins. Baker and Onion creek watersheds. *Purdy 1338*.

†VIOLA PINETORUM Greene subsp. GRISEA (Jeps.) R.J. Little. CRPR 1B.2. Perennial. Occasional in sagebrush scrub, lodgepole pine forest. Open DG soil. *Purdy 188, 837, 1002*.

MONOCOTS

ALLIACEAE

ALLIUM BISCEPTRUM S. Watson. Geophyte. Occasional in aspen groves, riparian woodland, and seeps below 2800 m (9100 ft). *Purdy 147*.

ALLIUM VALIDUM S. Watson. Geophyte. Occasional on creek margins and in water. *Purdy 217*.

CYPERACEAE

CAREX ABRUPTA Mack. Perennial. Uncommon in alpine talus, drying creek margins. *Purdy 1172.*

CAREX AQUATILIS Wahlenb. var. AQUATILIS. Perennial. Locally common in wet meadows and floating vegetation of pond margins. Includes one putative hybrid specimen. *Purdy 515.*

CAREX ATHROSTACHYA Olney. Perennial. Uncommon in sagebrush scrub to meadow transitions, drying muddy ponds, receding lake shores. *Purdy 1307.*

CAREX AUREA Nutt. Perennial. Uncommon in wet meadows, seeps, creek margins. *Purdy 1060.*

CAREX BREWERI Boott. Perennial. Uncommon on exposed alpine ridges and slopes. *Purdy 1041.*

♦CAREX CAPITATA L. Perennial. Rare in alpine areas. Known from a single collection in 1947, "Incosolable Range above Thunder and Lightning Lake, ca. 12,000 ft." *Howell 24109* (CAS, RSA).

†CAREX CONGDONII L.H. Bailey. CRPR 4.3. Perennial. Common in seasonally moist to xeric granitic alpine habitats: talus, slopes, drainages. *Purdy 404, 421, 609, 636, 637, 1169.*

CAREX DOUGLASII Boott. Perennial. Locally common in sagebrush scrub. *Purdy 33.*

CAREX FILIFOLIA Nutt. var. EROSTRATA Kük. Perennial. Common in sagebrush scrub, dry creek bed margins, alpine slopes and fellfields. Locally dominant in places. *Purdy 24.*

CAREX HAYDENIANA Olney. Perennial. Uncommon on alpine slopes, talus, fellfields. *Purdy 1304.*

CAREX HELLERI Mack. Perennial. Common in xeric alpine habitats: talus, ridges, drainages, slopes, and fellfields. *Purdy 664.*

CAREX HETERONEURA W. Boott. Perennial. Common in meadows, creek margins, seeps, perennial creek beds. Generally in wet or seasonally wet habitats. *Purdy 244.*

†CAREX IDAHOA L.H. Bailey. CRPR 2B.3. Perennial. Locally common in wet meadows of Coyote Flat. Dioecious, generally both pistillate and staminate plants present in populations. Exposed to heavy grazing. Only the second or third time documented in the Sierra Nevada with most California occurrences from the White Mountains. *Purdy 967, 1053, 1313, Taylor 8822* (UC).

CAREX ILLOTA L.H. Bailey. Perennial. Rare in riparian woodland, creek margins. Known from a single collection along Onion Creek in shade of aspens. *Purdy 111.*

CAREX MICROPTERA Mack. Perennial. Common in seeps, creek margins, receding lake shores, rocky alpine drainages. Generally near water or in seasonally moist microclimates. *Purdy 245.*

CAREX NEBRASCENSIS Dewey. Perennial. Occasional in wet meadows, seeps, creek margins. Lower elevations of Rawson Creek and Onion Creek watersheds. *Purdy 1076.*

CAREX ORESTERA Mack. Perennial. Rare on creek margins. In fine silt immediately adjacent water of small creek. Known from a single collection. Plants somewhat intermediate with *C. helleri*. *Purdy 586.*

CAREX PELLITA Willd. Perennial. Locally common in aspen groves, seeps. Below 2750 m (9000 ft). *Purdy 1263.*

CAREX PHAEOCEPHALA Piper. Perennial. Uncommon on alpine slopes and talus. *Purdy 679.*

CAREX PRAECEPTORUM Mack. Perennial. Rare on pond margins. Known from a single collection in floating vegetation of alpine wetland. *Purdy 364.*

CAREX PRESILII Steud. Perennial. Uncommon on rocky alpine slopes and scree. *Purdy 1303.*

♦CAREX PROPOSITA Mack. Perennial. Rare on alpine slopes, ridges. Known from a single collection on Coyote Ridge in 1950. *Raven 199a* (CAS).

CAREX RAYNOLDSII Dewey. Perennial. Rare in muddy banks of seeps. *Purdy 402.*

CAREX SIMULATA Mack. Perennial. Locally common in wet meadows. *Purdy 473.*

CAREX SPECTABILIS Dewey. Perennial. Uncommon in wet meadows, alpine drainages. Above 3350 m (11,000 ft). *Purdy 362.*

CAREX STRAMINIFORMIS L.H. Bailey. Perennial. Rare in alpine scree. Red metamorphic substrates. *Purdy 1302.*

CAREX SUBFUSCA W. Boott. Perennial. Rare in alpine talus and scree. Granitic substrates. Known from a single collection on southwest shore of Rocky Bottom Lake. *Purdy 1171.*

CAREX SUBNIGRICANS Stacey. Perennial. Uncommon in meadows, lodgepole pine forest. *Purdy 495.*

†CAREX TAHOENSIS Smiley. CRPR 4.3. Perennial. Uncommon in alpine fellfields, slopes of Coyote Ridge. Only collected once during this study, but known from three additional historical collections. *Purdy 6, Howell 23990* (CAS), *24001* (CAS, RSA), *Raven 199* (CAS, UC).

CAREX UTRICULATA Boott. Perennial. Locally common in wet meadows, stream and lake margins. *Purdy 410.*

CAREX VERNACULA L.H. Bailey. Perennial. Rare in alpine depression/drainage among talus. Growing in sandy soil of seasonally wet inlet to Thunder and Lightning Lake. *Purdy 638a.*

ELEOCHARIS ACICULARIS (L.) Roem. & Schult. var. ACICULARIS. Perennial. Uncommon in seeps, alpine depressions. Baker Creek watershed above 3200 m (10,500 ft). *Purdy 510.*

ELEOCHARIS PALUSTRIS (L.) Roem. & Schult. Perennial. Locally common in muddy shallows of lake margins. *Purdy 514.*

ELEOCHARIS QUINQUEFLORA (Hartmann) O. Schwarz. Perennial. Uncommon in wet meadows, seeps. *Purdy 98*.
ELEOCHARIS SUKSDORFIANA Beauverd. Perennial. Uncommon in wet meadows, seeps. *Purdy 896*.

IRIDACEAE

IRIS MISSOURIENSIS Nutt. Perennial. Locally common in sagebrush scrub, seeps, creek margins. Generally in disturbed, seasonally moist soil. *Purdy 148*.
SISYRINCHIUM IDAHOENSE E.P. Bicknell var. OCCIDENTALE (E.P. Bicknell) Douglass M. Hend. Perennial. Occasional in wet meadows, seeps, creek margins. Below 3050 m (10,000 ft). *Purdy 681*.

JUNCACEAE

JUNCUS BALTICUS Willd. subsp. ATER (Rydb.) Snogerup. Perennial. Common in wet meadows, seeps, perennial creek beds, muddy depressions. Frequently dominant in meadows. All collections well above upper elevation limit of 2,200 m in Jepson eFlora. *Purdy 708*.
JUNCUS DRUMMONDII E. Mey. Perennial. Uncommon in alpine slopes, depressions. *Purdy 642*.
JUNCUS MACRANDRUS Coville. Perennial. Occasional in wet meadows, creek margins. *Purdy 1250*.
JUNCUS MERTENSIANUS Bong. Perennial. Common in alpine depressions, meadows, creek margins, receding lake shores. *Purdy 512*.
JUNCUS MEXICANUS Willd. Perennial. Rare on creek margins. Known only from one collection in wet soil of perennial creek bottom and banks. *Purdy 70*.
JUNCUS ORTHOPHYLLUS Coville. Perennial. Common in wet meadows, creek margins. *Purdy 1314*.
JUNCUS PARRYI Engelm. Perennial. Common in alpine slopes, depressions, scree, creek margins. In dry or seasonally wet soil/substrate. *Purdy 1298*.
♦LUZULA ORESTERIA Sharsm. Rare. Perennial. Known from a single collection in 1929. Vague locality: "trail from South Lake to Green Lake." *Peirson 8501* (RSA).
LUZULA SPICATA (L.) DC. Perennial. Rare in alpine depression, fellfield. *Purdy 393*.

LILIACEAE

CALOCHORTUS BRUNEAUNIS A. Nelson & J.F. Macbr. Geophyte. Occasional in sagebrush scrub. *Purdy 185*.

ORCHIDACEAE

PLATANThERA DILATATA (Pursh) Lindl. ex L.C. Beck var. LEUCOSTACHYS (Lindl.) Luer. Perennial. Occasional in wet meadows, seeps, creek and lake margins. *Purdy 220*.
PLATANThERA TESCARNIS Sheviak & W.F. Jenn. Perennial. Occasional in wet meadows, seeps, creek margins. Rawson Creek watershed below 3050 m (10,000 ft). *Purdy 1248*.
SPIRANTHES ROMANZOFFIANA Cham. Perennial. Rare in wet flowing meadows and lodgepole pine forest. Known from a single site along lower Baker Creek. 2942 m (9652 ft). *Purdy 1327*.

POACEAE

*AGROSTIS GIGANTEA Roth. Perennial. Uncommon on creek margins of Onion Creek. Area exposed to heavy seasonal cattle grazing. Collected at 2900 m (9500 ft), which is well above listed upper elevation range of 2000 m for this taxon in the Jepson eFlora (Jepson Flora Project 2022). *Purdy 1377*.
AGROSTIS IDAHOENSIS Nash. Perennial (often appearing annual). Occasional in seeps, wet meadows, creek margins. Onion and Rawson Creek watersheds below 3000 m (10,000 ft). *Purdy 1061*.
AGROSTIS PALLENS Trin. Perennial. Uncommon in perennial creeks and ponds, aspen groves. *Purdy 81*.
AGROSTIS SCABRA Willd. Perennial. Common in meadow margins, perennial ponds, receding lake shores, alpine depressions. Seasonally moist, but exposed and well-drained habitats. *Purdy 1078*.
AGROSTIS VARIABILIS Rydb. Perennial. Uncommon in alpine depressions, drainages, and slopes. Well-drained soil in seasonally moist habitats above 3200 m (10,500 ft). *Purdy 647*.

ALOPECURUS AEQUALIS Sobol. var. AEQUALIS. Perennial. Uncommon in wet meadows, perennial ponds, lodgepole pine forest. open and seasonally flooded soil of depressions. Only known from two locations, but locally abundant to dominant there. *Purdy 195.*

BROMUS CILIATUS L. Perennial. Uncommon in seeps, riparian woodland, creek margins. *Purdy 1280.*

◆BROMUS PORTERI (J. M. Coult.) Nash. Rare. Perennial. Known from a single Peter Raven collection in 1950. Vague locality info: "Coyote Ridge... alt. 9800 ft." *Raven 175 (CAS).*

BROMUS SITCHENSIS Trin. var. MARGINATUS (Nees) B. Boivin. Perennial. Uncommon in aspen groves, riparian woodland. *Purdy 1102.*

*BROMUS TECTORUM L. Annual. Locally common in sagebrush scrub and disturbed road margins along lower stretches of Coyote Valley Road and Forest Service road adjacent Onion Creek, below 2800 m (9200 ft). Plants appear to be restricted to these two areas within the study area. *Purdy 850.*

CALAMAGROSTIS MUIRIANA B.L. Wilson & Sami Gray. Perennial. Uncommon in alpine depressions/drainages, slopes. *Purdy 646.*

CALAMAGROSTIS PURPURASCENS R. Br. Perennial. Occasional in alpine talus, scree, and slopes. *Purdy 308.*

CALAMAGROSTIS STRICTA (Timm) Koeler subsp. INEXPANSA (A. Gray) C.W. Greene. Perennial. Locally common in wet meadows, creek margins. Only collected twice in Rawson Creek watershed, but locally frequent to abundant where found. *Purdy 691.*

CALAMAGROSTIS STRICTA (Timm) Koeler subsp. STRICTA. Perennial. Rare in wet meadows, creek margins. Rawson Creek watershed. *Purdy 549.*

DANTHONIA INTERMEDIA Vasey subsp. INTERMEDIA. Perennial. Rare in wet meadows above Rocky Bottom Lake. *Purdy 427.*

DESCHAMPSIA CESPITOSA (L.) P. Beauv. subsp. CESPITOSA. Perennial. Common in wet meadows, seeps, creek margins throughout study area. *Purdy 1279.*

ELYMUS CINEREUS Scribn. & Merr. Perennial. Locally common in sagebrush scrub, creek margins. Below 3000 m (9850 ft). *Purdy 522.*

◆ELYMUS ELYMOIDES (Raf.) Swezey var. ELYMOIDES. Perennial. Rare, "near creek." Known from a single collection in 2010, but likely more common in lower elevations of the study area. *Andre 23058 (RSA).*

ELYMUS ELYMOIDES (Raf.) Swezey var. CALIFORNICUS (J.G. Sm.) J.P. Sm. Perennial. Common on alpine slopes, ridges, scree. *Purdy 42.*

ELYMUS SCIBNERI (Vasey) M.E. Jones ×. Perennial. Rare on creek margins. Putative hybrid of *E. scribneri* and some other *Elymus* species, likely *E. trachycaulus* subsp. *trachycaulus*, with which it is known to hybridize and was collected in the same area. Known from a single collection along perennial creek bed, Bishop Creek watershed. *Purdy 79.*

ELYMUS SIERRAE Gould. Perennial. Rare in alpine scree. Red metamorphic substrate. *Purdy 1299.*

ELYMUS TRACHYCAULUS (Link) Gould ex Shinnery subsp. TRACHYCAULUS. Perennial. Common in wet meadows, creek margins, sagebrush scrub. In seasonally wet to wet locations, throughout study area. *Purdy 568.*

◆ELYMUS TRITICOIDES Buckley. Perennial. Rare in riparian woodland. Known from a single collection in 2010. *Andre 23026 (UCR).* Not yet examined.

FESTUCA ARUNDINACEA Schreb. Perennial. Rare on on moist banks of Coyote Creek at first creek crossing (with Coyote Valled Rd). *Purdy 1209.*

FESTUCA KINGII (S. Watson) Cassidy. Perennial. Common in sagebrush scrub, limber pine forest, rock outcrops, alpine scree, talus, slopes, and ridges. Found in relatively xeric habitats throughout study area. Dioecious. *Purdy 873.*

◆†FESTUCA MINUTIFLORA Rydb. CRPR 2B.3. Perennial. Rare in alpine terrain above Thunder and Lightning Lake. Known from a single collection in 1947. *Howell 24111 (CAS, RSA).*

FESTUCA RUBRA L. Perennial (often appearing annual). Common in wet to drying meadows, creek margins, seeps. Plants most often presenting as solitary culms and not obviously rhizomatous or perennial. Do not key well in the Jepson. *Purdy 572.*

FESTUCA SAXIMONTANA Rydb. Perennial. Common in lodgepole pine forest, whitebark pine forest, aspen groves, perennial pond and creek margins, alpine fellfields and rocky outcrops. Often in moister microclimates or seasonally wet areas. *Purdy 25.*

GLYCERIA ELATA (Nash ex Rydb.) M.E. Jones. Perennial. Rare along weakly flowing creek in aspen grove. Known from a single collection, Rawson Creek watershed. *Purdy 1269.*

KOELARIA MACRANTHA (Ledeb.) Schult. Perennial. Common in sagebrush scrub, around perennial ponds, creek margins, alpine depressions and rocky slopes. If occurring in wet areas plant generally in drier microsites. *Purdy 206.*

MELICA STRICTA Bol. Perennial. Occasional in sagebrush scrub, perennial creek beds. *Purdy 28.*

MUHLenbergia FILIFORMIS (Thurb. ex S. Watson) Rydb. Perennial. Rare around drier edges of large wet meadow in glacial moraines west of Coyote Flat. *Purdy 966.*

MUHLenbergia RICHARDSONIS (Trin.) Rydb. Perennial. Common in/around perennial ponds, wet meadows, alpine depressions and slopes. In wet to seasonally wet habitats. *Purdy 1004.*

PHLEUM ALPINUM L. Perennial. Occasional in wet meadows, creek margins. *Purdy 182.*

POA CUSICKII Vasey subsp. CUSICKII. Perennial. Occasional in wet meadows, creek margins, alpine slopes. *Purdy 916.*

POA CUSICKII Vasey subsp. EPILIS (Scribn.) W.A. Weber. Perennial. Uncommon in alpine seeps, slopes, and fellfields. *Purdy 656.*

POA GLAUCA Vahl subsp. RUPICOLA (Nash ex Rydb.) W.A. Weber. Perennial. Uncommon on alpine slopes, ridges, and scree. *Purdy 624.*

POA KECKII Soreng. Perennial. Occasional in alpine fellfields, talus, and ridges. Two atypical "shade-form" plants (*Purdy 662, 1240*) included here but these may represent some other *Poa* species. *Purdy 1040.*

*POA PRATENSIS L. subsp. PRATENSIS. Perennial. Occasional in riparian woodland, wet meadows, creek margins. In wet areas exposed to seasonal cattle grazing. *Purdy 962.*

POA SECUNDA J. Presl subsp. JUNCIFOLIA (Scribn.) Soreng. Perennial. Rare in sagebrush scrub to wet meadow transition. A single collection from disturbed roadside habitat, Rawson Creek watershed. *Purdy 571.*

POA SECUNDA J. Presl subsp. SECUNDA. Perennial. Common in alpine various habitats: fellfields, slopes, talus, seeps. *Purdy 1150.*

POA STEBBINSII Soreng. Perennial. Rare in lodgepole pine forest, meadows. Known from a single collection in the Baker Creek watershed. *Purdy 497.*

POA WHEELERI Vasey. Perennial. Occasional in lodgepole pine forest, drying meadow margins, alpine slopes and ridges. *Purdy 325.*

STIPA COMATA Trin. & Rupr. var. COMATA. Perennial. Uncommon in sagebrush scrub, lake margins. *Purdy 545.*

†STIPA DIVARICATA Columbus & J.P. Sm. CRPR 2B.3. Perennial. Rare in alpine talus and rock outcrops. Synonym of *Piptantherum micranthum*. First records in the Sierra Nevada. *Purdy 435, 1119.*

STIPA HYMENOIDES Roem. & Schult. Perennial. Common in sagebrush scrub, alpine slopes and outcrops In xeric habitats throughout flora area. Includes a single *Achnatherum ×bloomeri* specimen collected by Peter Raven in 1950 (*Raven 164* [CAS, UC]). This taxon is a named hybrid of *S. hymenoides* and *S. occidentalis* var. *occidentalis* and the UC duplicate as been annotated by Mary Barkworth. *Purdy 163.*

STIPA KINGII Bol. Perennial. Rare in seasonally wet meadows along creek margins. Known from single collection near headwaters of Baker Creek. *Purdy 412.*

STIPA NELSONII Scribn. var. DOREI (Barkworth & J.R. Maze) Dorn. Perennial. Uncommon in meadows, creek margins, aspen groves. *Purdy 428.*

STIPA NEVADENSIS B.L. Johnson. Perennial. Uncommon in sagebrush scrub. Exposed ridges and slopes around 3100 m (10,200 ft). *Purdy 1008.*

STIPA OCCIDENTALIS Thurb. ex S. Watson var. CALIFORNICA (Vasey) J.R. Maze, Roy L. Taylor & MacBryde. Perennial. Uncommon in sagebrush scrub. *Purdy 629.*

STIPA OCCIDENTALIS Thurb. ex S. Watson var. OCCIDENTALIS. Perennial. Rare in sagebrush scrub. Known from a single mixed collection with co-occurring *S. occidentalis* var. *pubescens*. *Purdy 584b.*

STIPA OCCIDENTALIS Thurb. ex S. Watson var. PUBESCENS (Vasey) J.R. Maze, Roy L. Taylor & MacBryde. Perennial. Occasional in sagebrush scrub, alpine fellfields. Distal awn segments occasionally plumose at base. *Purdy 950.*

STIPA PINETORUM M.E. Jones. Perennial. Occasional in alpine fellfield, talus, slopes. *Purdy 1120.*

STIPA SPECIOSA Trin. & Rupr. Perennial. Rare in sandy soil at summit of a granitic rock outcrop in the southeast corner of the flora area. Onion Creek watershed. Collected at 2940 m, nearly 500 m above elevation limit listed in the Jepson eFlora (Jepson Flora Project 2022). *Purdy 1094.*

TORREYCHLOA PALLIDA (Torr.) G.L. Church var. PAUCIFLORA (J. Presl) J.I. Davis. Perennial. Locally common in wet meadows, muddy depressions, lake and creek margins. Growing in water or seasonally flooded areas. *Purdy 513.*

TRisetum PROJECTUM Louis-Marie. Perennial. Rare in wet meadows, seeps. Known only from one locality, and plants somewhat intermediate with co-occurring *Trisetum spicatum* there. *Purdy 1059.*

TRisetum SPICATUM (L.) K. Richt. Perennial. Common in meadows, seeps, creek margins, alpine slopes and ridges. Some plants appearing intermediate with *Trisetum projectum*. *Purdy 496.*

POTAMOGETONACEAE

POTAMOGETON GRAMINEUS L. Aquatic perennial. Locally common in muddy lakes and ponds in lodgepole pine forest. Abundant floating on water's surface and stranded on muddy shores. *Purdy 723.*

RUSCACEAE

MAIANTHEMUM STELLATUM (L.) Link. Perennial. Locally common in aspen groves. *Purdy 842.*

TYPHACEAE

SPARGANIUM ANGUSTIFOLIUM Michx. Aquatic perennial. Uncommon in shallow water of sheltered lake and pond margins. Uncommon in flora area, but locally abundant to dominant where found. *Purdy 493.*