Non Vascular Plants

ANACOLIA MENZIESII

Anacolia menziesii
Family Bartramiaceae

Covered Species

Troy Wirth

Description: Robust, branched, usually prostrate moss, pleurocarpous, occurring in loose yellow-green, silky, clumps, 3 - 5 cm (to 2 in.) high, with dense, felt-like reddish-brown tomentum (fine densely matted hair) of rough rhizoids on the lower stems. At this time, Clark County, Nevada, populations are not known to reproduce sexually .

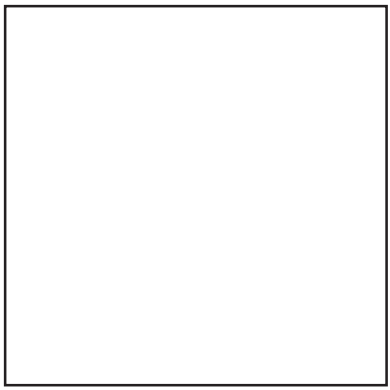
Habitat: Known to occur in pinyon-juniper and blackbrush communities. The Nevada populations are found only in deep, remote canyons with heavily shaded north-facing sandstone rock outcrops. Elevation: 1,463 m (4,800 ft).

Range: In Clark County, Nevada, known only from Red Rock Canyon National Conservation Area. Also known to occur in Utah. Otherwise, this moss is a Pacific Coast species.

Comments: This is one of the more robust species of moss in Clark County.

CLAOPODIUM WHIPPLEANUM

Claopodium whippleanum **Covered Species**
Family Thuidiaceae



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Description: Small, green to yellow-green, pleurocarpous moss, forming thin mats. Leaves catenulate (spreading from their bases and apically arch back across the stem, resembling links of a chain), muticous (without hair-points); median laminal cells strongly papillose, with each cell having a single, large papilla (small projection) on the surface. This moss is not known to reproduce sexually in Clark County, Nevada.
Habitat: Occurs in the pinyon-juniper community, in recessed cave-like sheltered areas that never receive direct sunlight. On soil or soil over rock, sometimes found on logs or roots. Elevation: 1,450 m (4,750 ft.).
Range: A common West Coast species, abundant in California. In Clark County, Nevada, known from the Red Rock Canyon National Conservation Area in the Spring Mountains.
Comments: *Claopodium* is one of the few local pleurocarpous mosses whose median laminal cells are strongly papillose, a feature recognizable in the field by the opaque appearance of the golden-green plant.

Crossidium moss

Crossidium seriatum **Evaluation Species**
Family Pottiaceae

Lloyd Stark

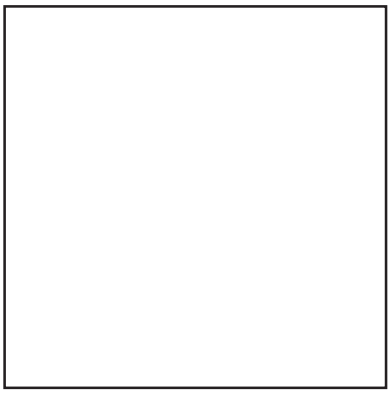
Description: Extremely small herbaceous moss, forming dense, hoary tufts that rarely exceed 6 mm (0.24 in.) in height. Leaves piliferous (bearing hairs); and under a microscope, the upper leaf surface has distinctive costal (midrib) photosynthetic filaments which are partially fused into short lamellae, the terminal cell of these filaments being nearly globose. Additionally, the median cells of the leaf are mostly unipapillose with several C-shaped papillae. Capsules oblong-cylindrical, or oblong-elliptic, erect, straight or slightly curved, peristome (fringe of teeth) of 32 hair-like divisions. These "teeth" are nearly erect and spirally twisted. This species is bisexual, but does not normally produce fruit.

Habitat: Restricted to sandstone and gypsum soils within the creosote-bursage community; on bluffs, outcrops, rock piles, and in protected areas on north or east side of rocks or shrubs, or at bases of bluffs. Grows in clumps on exposed soils or in shadow of shrubs like Mormon tea (*Ephedra*). Elevations: 400 - 750 m (1,312 - 2,460 ft).

Range: Locally known from a few areas around Lake Mead, Clark County, Nevada. Also known from Arizona, California, Baja California (Mexico), and Spain. Globally rare, known from less than ten populations, with possibly the most numerous in Nevada.

DICRANOWEISIA CRISPULA

Dicranoweisia crispula **Covered Species**
Family Dicranaceae



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Description: Erect, essentially unbranched, acrocarpous moss, in dense green clusters. Stems 1 - 4 cm (to 1.6 in.) high. Leaves very contorted, individually twisted in all directions when dry. Leaf margins not recurved; leaf cells with cuticular thickenings on the surface. Sporangium (fruiting structure) suberect to erect, with a peristome (fringe of teeth).

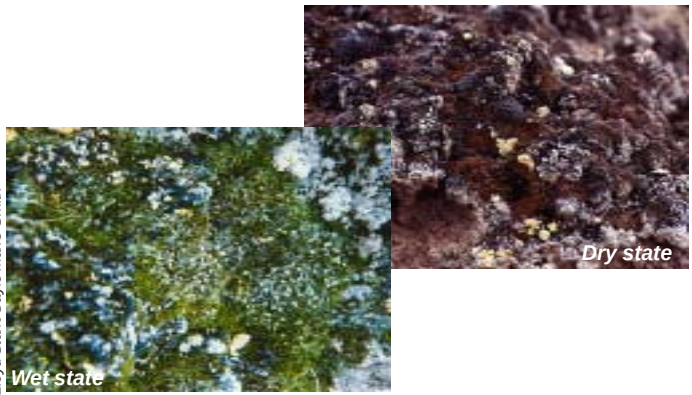
Habitat: On fallen tree logs, mostly along cracks of tree bark. The Lee Canyon population occurs in mixed conifer and pinyon-juniper habitats at 1,460 m (4,790 ft.) elevation.

Range: Commonly known from the Pacific Northwest and Utah. In Clark County, Nevada, known from the Spring Mountains in Lee Canyon, and along the Griffith Peak and Charleston Peak ridgeline. These sites represent the southernmost populations of the species.

Comments: Distinguishing features of this erect and essentially unbranched moss are the very contorted leaves that are individually twisted in all directions when dry, and the suberect to erect sporangium that have a peristome.

Gold Butte moss

Didymodon nevadensis **Evaluation Species**
Family Pottiaceae (Pottia Family)



Lloyd Stark/Gayle Marrs-Smith

Description: Long-lived wintergreen moss, forming a dense turf (mat-like), blackish-green above, reddish-brown below. Stems to 1 cm (0.4 in.) in length, branching occasionally. Stem leaves spirally twisted, appressed to weakly spreading when dry, 0.6 - 1.0 mm (0.04 in.) long, margins broadly recurved to revolute to the apex of the leaf. Leaf apex cucullate (shaped like a hood). Costa is percurrent (reaching to the apex but not beyond). Rhizoids few, arising from leaf axils. Asexual reproduction by rhizoidal tubers or axillary gemmae (vegetative diaspore that can germinate to form a new plant that is genetically identical to the parent plant). Male plants are unknown to science.

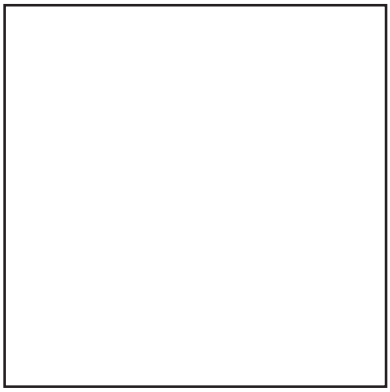
Habitat: Restricted to gypsum pockets and outcrops, on east to north facing slopes of loose soil, often associated with other moss species. Elevations: 400 - 706 m (1,312 - 2,316 ft).

Range: Known from vicinity of Gold Butte, Clark County, Nevada. Also known from British Columbia, Texas and Mexico. This species is scattered in distribution in gypsum pockets of southern Nevada and southern Utah, with one potential location in southern Colorado.

Comments: Type specimen collected by Gayle Marrs-Smith in 1994. This species can be identified by its twisted leaves when seen under a magnifying lens, along with the lime green coloration when wet, tan coloration when dry, and the distinct cucullate leaf apex.

DISTICHIUM INCLINATUM

Distichium inclinatum **Evaluation Species**
Family Ditrichaceae



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Description: This moss is 0.5 - 2 cm (to 0.8 in.) high. Stems dark green to brownish green. Leaves 2 - 3.5 mm (to 0.14 in.) long, filiform, stiffly erect from a sheathing base, distichus (two-ranked), appearing in two opposite rows along the stem. Capsule asymmetric, oblong, inclined (bending down), peristome with 16 irregularly divided teeth.
Habitat: Known to occur on damp stream banks or rotting logs, seepage areas, and in rock crevices along cliffs in the fir-spruce belt, about 2,600 m (8,530 ft.).
Range: Present in the Spring Mountains, Clark County, Nevada, possibly as the southernmost population of this species. This is a wide-ranging Pacific Coast species.
Comments: This species was last verified locally in the mid-1950s.

AMERICAN GRIMMIA

Grimmia americana **Evaluation Species**
Family Grimmiaceae


Lloyd Stark

Description: Small moss, forming dense, dark-brown hoary (whitish) tufts, 5 - 8 mm (0.3 in.) high. Leaves appressed, with hyaline hair points. When moist, leaves erect or erect spreading, but not contorted when dry. Upper leaf cells bistratose (having cells in two layers). Sporophytes (fruit) with short setae of about 1 mm, deeply immersed, and with a hand lens appear like orange-brown dots among the leaves. Capsules with peristome (fringe of teeth).
Habitat: Occurs on north facing limestone rocks exposed to the sun in the creosote-bursage community. Elevation: 817 m (2,680 ft).
Range: Known from only three populations worldwide: one in west Texas, one in Arizona, and one from the Newberry Mountains, Clark County, Nevada.
Comments: The peristomate capsule distinguishes this species from one of the most common mosses in Nevada, the gymnostomous (lacking a peristome) *Grimmia anodon*.

PSEUDOCROSSIDIUM MOSS

Pseudocrossidium crinitum **Evaluation Species**
Family Pottiaceae


Lloyd Stark

Description: This moss forms extensive mats, yellowish green to brown above, brown to reddish brown below. Stems to 1.5 cm (0.6 in.) tall. Leaves ovate to short-lanceolate, to 1.9 mm (0.07 in.), ending in a short or long awn, with densely papillose upper lamina (blade) cells. Distal laminal cells 13-15 microns, costa (midrib) with a single layer of guide cells, medial cells more papillose and thicker than the marginal cells. *Pseudocrossidium crinitum* only grows female plants, with male plants unknown in North America.

Habitat: Sandstone soil, elevation 700 m (3,000 ft).

Range: Common in the Chihuahuan Desert of southern New Mexico and west Texas, rare in the Mojave Desert. Originally collected in 1955 at the south end of Valley of Fire State Park, Clark County, Nevada. To date this population is the only known one from the State; it was revisited in 1999 and appears to be healthy.

Comments: Distinguished from awned *Syntrichia* species by the ovate to short-lanceolate leaves with densely papillose upper lamina cells. Chemically, *P. crinitum* reacts deeply yellow in potassium hydroxide solution, whereas *Syntrichia* reacts red. Also, *P. crinitum* resembles Gold Butte moss (*Didymodon nevadensis*), but Gold Butte moss has a somewhat cucullate (hood-like) acute leaf apex, the costa is percurrent (reaches the apex but does not extend beyond), and tubers are occasionally present on rhizoids.

SYNTRICHIA PRINCEPS

Syntrichia princeps **Covered Species**
Family Pottiaceae

Lloyd Stark

Description: Coarse moss, forming deep turf, green to yellowish-green in color, occasionally reddish, brownish or blackish. Stems 1 - 4 cm (to 1.6 in.) high. Leaves costate, the costa (midrib) being stout, rough, red, and conspicuous at the back, abruptly excurrent (extending out beyond the lamina of the leaf), with hyaline, spinulose hair point. Leaves twisted when dry. Whorls of enlarged leaves mark annual growth increments of the shoot and form an interrupted verticil (ring arranged around central axis). This species is bisexual, found often with capsules that have a white, corkscrew peristome that arises from a basal tube.

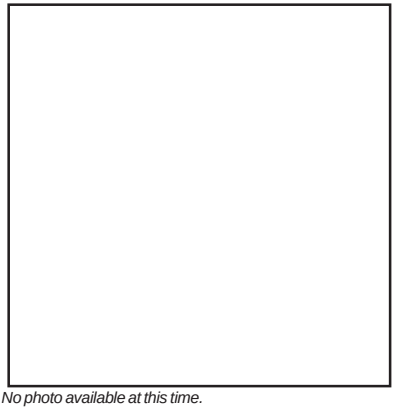
Habitat: In pinyon-juniper community, specifically in soil that is shaded by boulders.

Range: Fairly common along the coast of California, Oregon, and Washington. In Clark County, Nevada, currently known only from sites in the Red Rock Canyon National Conservation Area and the Virgin Mountains.

Comments: *S. princeps* was previously known as *Tortula princeps*. It is a bisexual species and often with capsules (spore-containing sac), whereas star moss (*Tortula ruralis*), a closely related species, is dioicous (male and female parts not on same moss), and without capsules.

TRICHOSTOMUM MOSS

Trichostomum sweetii **Evaluation Species**
Family Pottiaceae



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Description: This moss appears green when wet or dry. Leaves are ligulate (tongue-like) with essentially parallel margins, and with a very slight incurvature of the leaf apex (appears like a hook). Capsule with a peristome ("trichostomum" is the Greek word for hairy mouth, referring to the fine, filiform teeth of the peristome in this genus).

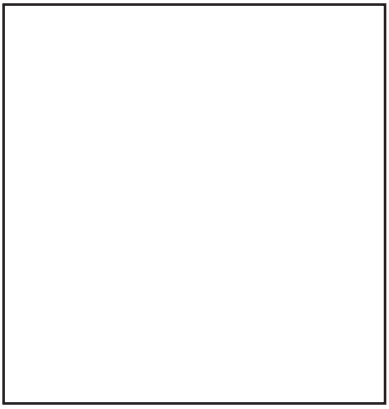
Habitat: Known to occur in sandstone bluffs and sandstone-derived soil, often shaded by rocks, in creosote-bursage community. Elevations: 610-680 m (2,000-2,230 ft).

Range: Known globally from fewer than ten populations; this moss was first described from the Virgin Mountains (type locality) in Clark County, Nevada. However, recent attempts to relocate the type population in the Virgin Mountains proved unsuccessful. One large population was located on the ancient sand dune formations at the Red Stone Picnic Area within the Lake Mead National Recreation Area. Also known to occur in Arizona and California.

Comments: Distinguishing features of this *Trichostomum* include the very slight incurvature of the leaf apex, as opposed to the highly incurved leaf margins in *Weissia*, a closely related genus.

UNDESCRIBED TARGIONIA LIVERWORT

***Targionia* sp. nov.** **Evaluation Species**
Family Targioniaceae



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Description: *Targionia* is a genus of thalloid liverworts in the order Marchantiales. The thalloid gametophyte is generally seen as a ribbon of tissue, green if wet, and black if dry. This "ribbon" is robust, leathery, and opaque, with surfacial pores venting air chambers in the thick thallus. Epidermal pores are surrounded by specialized cells like the bulging trigones (triangular-shaped wall thickening in the corner of a cell where it abuts against two other cells). Presence, shape, and size of trigones are characteristic of some liverwort genera. Thallus is either male or female, each having specialized organs. Capsules mature on the underside of the thallus.

Habitat: Liverworts (about 8,500 species) are found throughout the world, from the arctic to the tropics. Known from dry places to aquatic habitats, with most adapted to moist habitats. This *Targionia* species occurs in deeply shaded habitats, often associated with ferns, specifically along north sides of boulders, or in deeply recessed cliff overhangs. Elevations: above 1,220 m (4,000 ft).

Range: This *Targionia* species appears to be a Mojave Desert endemic. In Clark County, Nevada, known from the Red Rock Canyon National Conservation Area near White Rock Spring, in the Newberry Mountains near Christmas Tree Pass, and in the Eldorado Mountains near the mouth of Keyhole Canyon.

Comments: This *Targionia* liverwort, a rare species, is a recent discovery. It will be described shortly by Dr. Alan Whittemore, Missouri Botanical Garden.

WATCH LIST NON-VASCULAR SPECIES

Fissidens sublimbatus
Splachnobryum obtusum