

FINAL REPORT

2005 FIELD SURVEYS ON ROGUE RIVER-SISKIYOU FOREST

For the rare moss *Encalypta brevicolla* var. *crumiana*

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BACKGROUND

Encalypta brevicolla (Bruch & Schimp. In B.S.G.) Bruch ex Angstr. var. *crumiana* (Hort.) Crum & Anderson, also known as Crum's snifter moss or Crum's extinguisher moss, was described from a 1978 collection near Squirrel Peak, Curry County, Oregon, on Gold Beach Ranger District of what was then called Siskiyou National Forest.

Variety *crumiana* is the only variety or subspecies of *Encalypta brevicolla* that occurs in the U.S. Pacific Northwest.

Before this summer's field reconnaissance, only two small occurrences of this moss were known in the entire world. The type locality occurrence (near Squirrel Peak) consists of several patches in a few square meters area on the rock outcrop there. The other "known" occurrence is in Washington State, in Mt. Rainier National Park near Longmire Campground. However, botanists and bryologists have not been able to relocate it since it was collected there in 1937. Based on the paucity of known extant sites, the small size of the type locality occurrence, and the failure to find new sites in previous efforts, Crum's extinguisher moss was judged to be close to extinction.

The Squirrel Peak type specimen was collected originally by bryologists Dave Wagner, John Christy, Veva Stansell and companions. A re-visit and search of nearby rock outcrops in the general vicinity by John Christy, Richard Helliwell and Veva Stansell in year 2000 revealed only the patch that was discovered in 1978 with no new occurrences found. This effort was documented in a report (J. Christy, 2002). The original patch had declined in size by then (John Christy, personal communication 1/27/2005). Before this summer's field reconnaissance, none of the Forest Service botanists or rare plant contractors currently working on the Forest had seen this *Encalypta*.

The type locality occurrence is near but not inside the 2002 Biscuit Fire perimeter. It is in a "fuel management zone" (FMZ) where fuels reduction activity is planned as part of Biscuit Fire Recovery Activities. With the project's mitigation measures properly implemented, known sites of this moss can be protected during this activity. Other than the occurrence at the type locality, this moss was not detected during the 2003 project field reconnaissance conducted for all special status vascular plants, lichens, and bryophytes in this FMZ and other FMZ's planned on adjacent rocky ridges.

Field work was funded by \$8,000 from the Region's Interagency Special Status/Sensitive Species Inventory and Conservation Program as well as normal Forest-level NFWF funds.

FIELD RECONNAISSANCE EFFORTS AND RESULTS

Bryologist Dr. Dave Wagner, Northwest Botanical Institute (he made the original type collection) was hired to guide FS botanists back to the type locality, help us form a search image for the *Encalypta* and its habitat, help us discriminate among 2-3 *Encalypta* species and other similar mosses present, and help with the search effort. He also prepared an excellent "study guide" for the Rogue River-Siskiyou NF botanists conducting the field reconnaissance. It discusses nomenclature, keys, problems in the literature, distinguishing field characteristics, photos and illustrations. Readers can request this document from the Forest.

On May 11 and 12, 2005, eight of us searched in the general vicinity of the type locality near Squirrel Peak. Participating were myself, Jenifer Hutchinson, Veva Stansell, Maureen Jones, Karen McCullough, Barbara Mumblo, Paul R. (Robin) Jones, and Dave Wagner. Lingering winter snowdrifts dictated we walk rather than drive to the type locality and other sites searched in these two days. Also, freshly fallen snow hindered our progress but fortunately didn't cover the vertical and steep rock faces on which *Encalyptas* grow. *Encalypta* gametophytes assumed to be *Encalypta brevicolla* var. *crumiana* were quickly relocated at the type locality, on the cool side of a rock outcrop near the road, where they had been found in the past (Junction of Burnt Ridge Road 2308 and 2308-076. T34S, R10W, Sec 31, SW ¼ of the NE ¼. BM 4404 on some maps, elev. 4389 on 1998 edition of USGS Brandy Peak 7.5' topographic map). Several modest-sized patches were found in an area about 25 X 10 feet. Sporophytes (capsules and calyptra) were not present on these plants. Later in the day, the lower portions of this large rocky area were searched by Robin and Maureen. Only *Encalypta ciliata* was found there (some had sporophytes, making identification possible). There may still be some small areas of suitable habitat in the middle portion of this large rocky area that were not searched well.

Also on the first day, a rock outcrop complex about 0.6 miles east of Squirrel Peak was searched by all of us except Veva. Only *Encalypta ciliata* was found here (many had sporophytes, making identification possible). This location is at T34S, R10W, Sec 29, SW1/4 of the SE ¼.

On the second day, the group split up and conducted the following searches:

1. Veva, Karen, and myself searched cliffs at roadside along road 2308-154 in T35S, R10W, sec 18, NE ¼ of NE ¼. Three small clusters of *Encalypta* gametophytes (no sporophytes) were found in a 25 ft. strip at roadside, in the middle section of these cliffs. Additional suitable habitat was higher, but inaccessible. The three clusters were flagged with yellow/black stripe ribbon. One cluster had about 10 gametophytes, the other clusters only had 1 or 2 gametophytes. The largest cluster unfortunately was in a moss mat that appears to be coming slowly loose and dying out so it may not muster the energy to produce sporophytes in the years to come.

2. Maureen and Robin searched rock outcrops along the top ridge of Sugarloaf Mountain, out to the SW ¼ of the NW ¼ of section 4. They reported there were not a lot of bryophytes there and perhaps the rock type was different than the type locality and other outcrops searched these two days. They did not find any *Encalyptas*.
3. Maureen and Robin also searched rock outcrops on a minor peak with elevation shown on the topo map as 4896'. This is in T35S, R10W, sec 7, NE ¼. Much of the area had been burned and there were not many suitable rock faces. They did not find any *Encalyptas*.
4. Dave, Barb, Jennifer and Karen searched rock outcrops on the west and northwest sides of Fish Hook Peak, well above road 2308-154. Most of these areas had been burned and no *Encalyptas* were found.
5. Wayne searched rock outcrops on the northwest side of Fish Hook Peak, nearer to the summit. Two rock outcrops here had *Encalypta ciliata* (many had sporophytes, making identification possible).
6. Dave, Barb, Jennifer and Karen also searched rock outcrops on top of Fishhook Peak and along the ridge northward to Fishhook trailhead on Road 076. Some of these areas had been burned but some were still reasonably suitable habitat. No *Encalyptas* were found here.
7. One very promising large outcrop near the ridge north of Fish Hook Peak was too difficult (and unsafe) to reach with the snow present and should be re-visited. It is a large NE-facing cliff complex, close to but not visible from the trail, at T35S, R10W, Sec 8, SE ¼ of the SW ¼. The best access is probably leaving the trail at a minor saddle near section line 8/17 and traveling SE or ESE.

Results of May 11 and 12, 2005 searches: No *Encalypta brevicolla* var. *crumiana* found except known patches at the type locality. One site which could be re-visited, had *Encalyptas* with no sporophytes. Another rock outcrop, not visited, has what appears to be promising habitat.

On June 15, 2005, Dave Wagner, Steve Namitz, Jenifer Hutchinson, Dave Shea, and myself, searched for *Encalypta brevicolla* var. *crumiana* on Mt. Bolivar in Coos County (near the Coos/Curry county line) at the east end of Powers Ranger District, T32S, R10W, Sec 14, NE ¼, in the Wild Rogue Wilderness. **We found multiple patches of *Encalypta brevicolla* var. *crumiana* on a number of rock outcrops on the NW side of the summit, both above and below the trail!** *Encalypta ciliata* is also present here. **We also found patches of what appears to be *Encalypta brevipes* below the trail!** This is a major range extension for *Encalypta brevipes* (previously known in Oregon only from Clatsop County). Collections were made of all these *Encalyptas*.

On June 16, 2005, I searched the north end of Saddle Peaks (about 2.3 miles SW of Mt. Bolivar) which is in Curry County (near the Coos/Curry county line), T32S, R10W, Sec 21, SE ¼, on the

Wild Rogue Wilderness boundary. **I found multiple patches of *Encalypta brevicolla* var. *crumiana* on a number of rock outcrops here, most commonly on the NW aspect. *Encalypta ciliata* is also present here, at least as abundant as *Encalypta brevicolla* var. *crumiana*. **At least one patch that appears to be *Encalypta brevipes* is here also.** Collections were made of all these Encalyptas.**

On June 23, 2005, Jenifer Hutchinson, Kyle Park, Danielle Peyton, and myself, searched the Brandy Peak Vicinity in Curry County. This area is 3-4 miles northeast of the type locality. After an all-day search we **found one patch of *Encalypta brevicolla* var. *crumiana* at the base of a small meta-sedimentary rock outcrop 30-40 ft. WNW of Brandy Peak summit, T34S, R10W, Sec 21, SE ¼.** There are about 4 patches in a 3 sq. meter area. *Encalypta ciliata* is common in the area we searched this day.

HABITAT DESCRIPTION

The occurrences of *Encalypta brevicolla* var. *crumiana* at the type locality near Squirrel Peak, Brandy Peak, Mt. Bolivar and Saddle Peaks all have the following habitat characteristics:

- Metamorphic rock outcrops on ridges and peaks
- 25-30 miles from the ocean
- 3800-5300 ft. elevation
- Most commonly found on the NW aspect of the outcrops.
- Outcrops are fully exposed to wind and fog but microsites for *Encalypta brevicolla* var. *crumiana* are often sheltered somewhat in crevices, concavities, under minor overhangs, or even behind shrubs.
- Usually on partially decomposed organic cryptogam sods which have accumulated on the rock surface and are sometimes only loosely attached to the rocks or starting to fall away.
- Some trees may be nearby but *Encalypta brevicolla* var. *crumiana* does not seem to be found on rock outcrops shaded by conifer forest canopies.

John Christy's description of associated species at the type locality (J.Christy, 2002) is accurate for all the sites where we found *Encalypta brevicolla* var. *crumiana*. He states:

“The vascular flora is dominated by a *Sedum* - *Selaginella* - *Cheilanthes* rock garden, with the bryophyte flora dominated by *Dryptodon patens*, *Grimmia montana*, and species of *Racomitrium*.”

John Christy's report also provided a list of bryophytes found at the type locality which appears relatively accurate for all the additional sites we found this summer:

“Oregon, Curry Co.: Siskiyou National Forest, igneous outcrop with northwest aspect, just NNE of junction of Burnt Ridge Rd 2308 and Fish Hook Rd 920, 0.5 mi SW of Squirrel Peak, 8 mi ENE of Agness. T34S, R10W, Sec. 31. 423423N 1235521W. 4400 ft. (Type locality for *Encalypta brevicolla* var. *crumiana*).

Liverworts

Cephaloziella divaricata
Douinia ovata
Plagiochila porelloides
Porella cordaeana
Scapania americana

Dicranum scoparium
Dryptodon patens
Encalypta brevicolla var. *crumiana*
Grimmia anomala
Grimmia montana
Grimmia torquata
Homalothecium cf. *nevadense*
Isothecium myosuroides
Orthotrichum rupestre
Plagiothecium denticulatum
Polytrichum piliferum
Pseudoleskea patens
Pterigynandrum filiforme
Racomitrium elongatum
Racomitrium sudeticum
Tortula norvegica
Tortula ruralis"

Mosses

Amphidium californicum
Andreaea schofieldiana
Bartramia pomiformis
Brachythecium sp.
Bryum canariense
Claopodium bolanderi

It is not possible to differentiate suitable habitat for *Encalypta brevicolla* var. *crumiana* from suitable habitat for the other *Encalyptas* discussed in this report. However, on the somewhat colder north and northeast aspects of these rock outcrops, there was a tendency to find *E. ciliata* and not *E. brevicolla* var. *crumiana*.

USEFUL FIELD CHARACTERS TO DISTINGUISH *Encalypta brevicolla* var. *crumiana* from *Encalypta ciliata* and others.

The calyptrae of the genus *Encalypta* are unique and easy to recognize when present.

The leaves of the *Encalyptas* discussed here have acute, apiculate, or hairpointed tips ranging from 0-1.5 mm long. When sporophytes are not present, there is one *Tortula* here with very short or no hairpoints that looks a lot like these *Encalyptas*. There is also a *Bryum* here that sometimes looks like an *Encalypta* when sporophytes are not present.

Encalypta ciliata has a "rim" (circumferential bulge) at the base of the calyptra where the fringe begins. This feature is absent or only poorly developed in *Encalypta brevicolla*.

The sporophytes of *E. brevicolla* have more or less reddish stems compared to the green or straw-colored stems of *E. ciliata* sporophytes.

E. brevicolla has a white or peach-colored, poorly developed peristome compared to the more or less reddish, better developed peristome of *E. ciliata* (this character may only be useful later in the season).

There is one leaf character discovered this summer that consistently differentiates *E. ciliata* from *E. brevicolla*. This allows discrimination when sporophytes are not present. But it can only be seen with a hand lens after learning the character under a dissecting microscope with good light: At 20-40X the costa on the underside of the leaves of *Encalypta brevicolla* var. *crumiana* are minutely papillose or scabrous. *E. ciliata* has a smooth costa on the leaf undersides. Dave Wagner cautions us that minutely papillose or scabrous under-leaf costas are present on other *Encalypta* species, so this feature should be used only to discriminate between *E. brevicolla* and *E. ciliata*.

E. raptocarpa was not found here this summer but is present in other parts of southwestern Oregon. Like *E. brevicolla*, it has red-stemmed sporophytes and does not have the “rim” at the base of the calyptra. However, *E. raptocarpa* has a ragged, but not fringed, calyptra base, and ribbed capsules. *E. brevicolla* has a fringed calyptra base, and smooth or wrinkled capsules that are not ribbed.

E. procera has spiraling ribbed capsules. *E. brevicolla* has smooth or wrinkled capsules that are not ribbed.

Dave Wagner suggested that *E. brevicolla* has a more “tapered” calyptra compared to the somewhat more abruptly “beaked” calyptra of *E. ciliata*. I understood the distinction but was unable to detect the difference in the field during May and June.

Encalypta brevipes sporophytes have generally shorter stems and shorter calyptrae beaks than *E. brevicolla* and *E. ciliata*. It has fringed calyptrae. It lacks a peristome. Capsule is smooth. It was discerned in the field this summer because the sods with sporophytes appeared “squatty” (the calyptrae were down close to the leaves with very little stem showing). Since the specimens are currently elsewhere, I don’t know yet about sporophyte stem color, costa papillosity, calyptrae base shape or other field characters that would differentiate this species from *E. brevicolla* and *E. ciliata*.

PROMISING AREAS TO SEARCH IN THE FUTURE

The following areas on Rogue River-Siskiyou NF and adjacent BLM lands (Grants Pass and Glendale Resource Areas of Medford District BLM) have not yet been searched thoroughly. They are listed in order of priority based on apparent quality of habitat from aerial photos and proximity to known occurrences of *Encalypta brevicolla* var. *crumiana*:

- Bear Camp Ridge, T34S, R10W, Sec 22, NE ¼.
- Knob 0.6 miles north of Brandy Peak, T34S, R10W, Sec 22, NW ¼, more or less right on the section line.
- The large NE-facing cliff complex 0.35 miles NNE of Fish Hook Peak, close to but not visible from the trail, at T35S, R10W, Sec 8, SE ¼ of the SW ¼. The best access is probably leaving the trail at a minor saddle near section line 8/17 and traveling SE or ESE.
- Cliffs at roadside along road 2308-154 in T35S, R10W, sec 18, NE ¼ of NE ¼. This site was mentioned in the May 11-12 discussion above. If no sporophytes are present in a re-visit, it may be worth collecting a few rosettes to look at the leaf underside costa characters. A ladder to see a bit higher on the cliff might be useful, or a safety rope so that a few parts of the cliff top can be safely examined. Note that if this site turns out to have *Encalypta brevicolla* var. *crumiana*, it would be the first Oregon location that is not near a ridgetop.
- Northwest side of Hobson Horn, T35S, R9W, Sec 5, SE ¼.
- Diamond Peak along the Coos/Curry County line (between Mt. Bolivar and Saddle Peaks). T32S, R10W, Sec 15.
- An un-named cliff/peak in the Wild Rogue Wilderness on BLM land about 1 mile SSE of Saddle Peaks looks promising but almost impossible to get to. It is 3600-3900 ft. elevation, at T32S, R10W, Sec 27, SW ¼.
- 10-20 miles SSW of the area searched this summer, Horse Sign Butte, Collier Butte, and Big Craggies appear to have potentially suitable habitat for *Encalypta brevicolla* var. *crumiana*.

From Mt. Bolivar looking north and northwest, no similar high rocky outcrops, ridges, or peaks were visible to the horizon (somewhere in Coos, Douglas, or Lane Counties). To the west, Iron Mountain and Copper Mountain may be high enough but are not considered good candidates because they are formed from ultramafic parent material. In Douglas, Josephine, and Jackson Counties to the east it is assumed without any real evidence that the climate (drier summers, colder winters) is probably not appropriate for *Encalypta brevicolla* var. *crumiana*.

Outside of this local area, there is at least a remote chance that any similar habitat between here and the Puget Sound Region of Washington State could support this species. Since there is a 1937 collection from Mt. Rainier National Park, searches in apparently suitable habitat in that vicinity seem particularly warranted.

MISCELLANEOUS

Maps of the areas already searched are attached to the paper version of this report kept at the S.O. in Medford.

Maps of the areas showing promise for future searches are kept with the paper version of this report in the botany files in the S.O. in Medford.

Sighting forms and maps for the new sites discovered this summer are being completed and will be available at the S.O. in Medford, on the rare plants module of NRIS, and eventually in the Oregon Natural Heritage Program database.

REFERENCES

Christy, John A. September 2002. Oregon Natural Heritage Program unpublished report to Siskiyou National Forest titled Survey For *Encalypta brevicolla* var. *crumiana*.