SOUTHERN OREGON CADDISFLY SURVEYS

FINAL REPORT FROM THE XERCES SOCIETY TO THE
INTERAGENCY SPECIAL STATUS SENSITIVE SPECIES PROGRAM (ISSSSP)

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Castle Rock Fork, Douglas County, OR. Photo by Candace Fallon / The Xerces Society.

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THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION

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SUMMARY

Candace Fallon and Michele Blackburn (Xerces Society) conducted surveys for *Agapetus denningi* and *Farula davisi* in June and August 2014 in the Medford BLM District (Cascade Siskiyou National Monument), Umpqua National Forest (Tiller Ranger District), and Rogue River Siskiyou National Forest (High Cascades Ranger District) in Douglas and Jackson counties, Oregon. The primary purpose of these surveys was to determine whether these two caddisfly species occurred on Forest Service (FS) or Bureau of Land Management (BLM) land near historic Oregon localities. Both species are known from single collections made prior to 1951. No *F. davisi* or *A. denningi* were encountered during the 2014 surveys; however, the OR-SEN caddisfly *Namamyia plutonis* was collected from one of the Cascade Siskiyou National Monument sites. To our knowledge, this caddisfly species has not previously been documented on the Medford BLM District.

INTRODUCTION

Caddisflies are important components of freshwater streams, playing significant roles as plant consumers and food for fish and other animals. They comprise one of the largest groups of aquatic invertebrates, with about 1,400 species known from Canada and the United States and new species being discovered every year (Wiggins 2004). They can be highly specialized and sometimes intensely localized, occurring in only one seep or stream system. In Oregon, several caddisfly species are known from only their type collections, including two Oregon-strategic (OR-STR) species: *Farula davisi* (Medford District BLM) and *Agapetus denningi* (Rogue River Siskiyou National Forest). Both species are suspected to be extirpated, as they occurred historically in the state but efforts to relocate them have been unsuccessful (NatureServe 2014).

Survey efforts in 2014 focused on sites in southwest Oregon near the historic type localities on Medford BLM, Rogue River Siskiyou NF, and Umpqua NF lands. In general, species of both genera are associated with cool forested streams, with *Farula* usually associated with montane environments and *Agapetus* often occurring in hilly areas (Anderson 1976). Immature stages are unknown for both species, although a single pupal specimen collected from Castle Rock Creek on the Umpqua National Forest in 1999 may represent *F. davisi*; additional collections at this site are needed to confirm this determination (Wisseman 2008, pers. comm., cited in Foltz 2008).

FARULA DAVISI

SITE SELECTION

This farulan caddisfly is known from a single collection of two males found in tree traps near a small stream on Green Springs Mountain. The collection data notes this site was located across from a marshy area, and because most caddisfly species do not disperse far from their emergence sites, the origin of these collections is likely either a marsh or a stream. *Farula* species tend to inhabit small, cold water forested streams or seeps of higher gradient and are commonly found on exposed bedrock with a thin stream of water passing over it (Foltz 2008). Because so little is known about this particular species, we searched for habitat types similar to those used by the closely related *F. malkini*. These sites are characterized by mature or old-growth forest streams with cool water, partial to dense shade, moderate to high gradient, channels half a meter to 3 meters wide, and the presence of some bedrock (Wisseman 2014, pers. comm.).

Robert Wisseman conducted targeted surveys for this species at Green Springs Mountain in the 1990s but was unsuccessful in obtaining any specimens. The species fact sheet (Foltz 2008) for this species recommends exploring "similar mountainous areas in the region for suitable habitat," so we focused our surveys near Green Mountain in the Cascade Siskiyou National Monument. We consulted with Chris Volpe (fisheries biologist, Medford District BLM) to select high quality yet accessible sites that share habitat characteristics similar to *F. malkini*. Based on these consultations, we selected four streams to visit (13 sites total) between 3,400 and 4,400 feet elevation. All of these sites are approximately 11-13 miles southeast of Ashland (the historic locality specifies 10-12 miles east of Ashland). We focused on this area to the southeast of Ashland rather than directly east because the streams that most fit the suspected habitat description were located in this area.

SURVEY PERIOD

This species is known from two males collected in the fall of 1950; however adults of other *Farula* species are generally active between April and June. *F. malkini*, which is thought to be closely related to *F. davisi*, is active from April to July. Given the higher elevations for our proposed survey sites, we settled on a late June survey period.

SAMPLING METHODOLOGY

We followed the general Trichoptera and species specific survey protocols for *F. davisi* developed by Foltz (2008). Surveys took place between the hours of 9am and 6pm on still days with minimum temperatures at least 15.5 °C (60 °F). In general, we spent a minimum of 30 minutes (but often up to an hour) carefully surveying each site, sweep netting vegetation adjacent to the stream and looking for pupae and larvae on rocks and other substrate. Individual adult caddisflies were collected by sweep netting or by collecting them straight into a vial or using a combination of sweep net and aspirator. Overall, the surveyors found that sweep netting used in conjunction with visual surveys was the most successful method for collecting adult caddisflies at these sites. Caddisflies observed in flight could be caught midair with a net. We also used beat sheets at several sites, but this technique was often too rigorous for delicate streamside vegetation. Surveyors searched streams for larvae and pupae to determine if the target genus was present. Representatives of all adult caddisfly species and several pupal or larval species observed were collected for identification by a Trichoptera expert.

SURVEY RESULTS

A table of known records for this species is available in Appendix I. See Appendix II for a table of all sites surveyed for this species in 2014. A map of the 2014 survey sites is available in Appendix IV. Below, we provide photos and a brief description of each site visited, moving in chronological order.

JUNE 24, 2014: CASCADE SISKIYOU NATIONAL MONUMENT

On June 24, C. Fallon and M. Blackburn surveyed for *F. davisi* in two different creeks (7 sites total) in the Cascade Siskiyou National Monument near Green Springs Mountain, Oregon.

SITES 1 – 4: EMIGRANT CREEK & WATERFALL

SURVEY TIME: 10:10 AM – 2:04 PM

Habitat description: Heavily shaded perennial stream. Streamside vegetation includes horsetail ferns (*Equisetum*), snowberry (*Symphoricarpos*), oceanspray (*Holodiscus*), blackberry (*Rubus*), gooseberry (*Ribes*), currant (*Ribes*), rose (*Rosa*), coltsfoot (*Petasites*), and twinflower (*Linnaea borealis*). Stream supports a steady water flow over small to medium sized rocks with larger boulders interspersed. The canopy cover is primarily Douglas-fir (*Pseudotsuga menziesii*), bigleaf maple (*Acer macrophyllum*), western red cedar (*Thuja plicata*), Indian plum (*Oemleria cerasiformis*), hemlock (*Tsuga*) and madrone (*Arbutus menziesii*). The creek itself is mostly open but the edges are dense with horsetails, sword fern (*Polystichum munitum*) and coltsfoot. Water depth varies from several centimeters to small pools less than half a meter deep. Stream width is 1-2 meters throughout most of the survey area, except for a large pool at the base of Emigrant Creek Waterfall, where it is roughly 5 meters wide. One of the smaller pools was observed stagnant with algae, and rocks in several areas of the creek were covered with diatoms. The waterfall face was overgrown with algae. Substrate composed of rocks, pebbles, boulders, silt and sand, with larger rock slabs, fallen trees, and bedrock in some areas. Water temperatures ranged from 9-11° C (49-52° F).

Human impacts: This stream has been redirected through a culvert that passes under a gravel road. The waterfall is easily accessed by a worn foot path leading from the main gravel road up along the creek to the fall itself.

Collections: No caddisfly adults were collected from this creek or the waterfall. However, it appeared that there were relatively abundant populations of larval caddisflies present throughout the stream, including free living larvae and casemakers that used pebbles, rocks, bark, and pieces of green vegetation. We also observed stonefly and mayfly larvae and two gilled Pacific giant salamanders. We did collect 2 panel case larvae (*Lepidostoma* sp.) from a submerged madrone leaf at the Emigrant Creek 2 site and four *Micrasema* larvae from the bedrock face of Emigrant Creek Waterfall.

SITE 5 – 7: PORCUPINE CREEK

SURVEY TIME: 2:32 PM – 5:08 PM

Habitat description: Porcupine creek is a tributary to the Emigrant River. The survey area was characterized by a shallow stream bed with low velocity. Streamside vegetation was primarily herbaceous with low-growing shrubs, coltsfoot, gooseberry, twinflower, and star of Solomon. Bigleaf maple and Douglas-fir shade the stream, providing a tall canopy growing steeply upslope from the creek. Several rare flowering phantom orchids (*Cephalanthera austiniae*) were also scattered throughout the site, growing through thick duff upslope from the water's edge. The stream substrate was composed of silt, sand, pebbles, and boulders, usually at a depth of 5-15 centimeters and a width of 2-3 meters. Diatom algae present on some rocks. Downed wood is present throughout the site with some scattered, exposed bedrock, especially in areas of small waterfalls. Water temperature during the surveys was 10° C (50° F).

Human impact: Culvert downstream of site; otherwise, none apparent.

Collections: We observed several large, black caddisflies and one small, 4-5 mm darkly mottled caddisfly near the stream that we were unable to collect. However, we did collect 3 adults (2 females and 1 male) of *Namamyia plutonis* (an OR-SEN species) and 2 adult male *Heteroplectron californicum*.

JUNE 26, 2014: CASCADE SISKIYOU NATIONAL MONUMENT

Heavy rain showers occurred throughout the area overnight and into this morning, ceasing around noon. Many plants were bent over because of the rain. Survey conditions were not ideal for adult searches. Wet vegetation made sweep netting very difficult, and many insects were taking refuge deeper in the forest and on the underside of vegetation. M. Blackburn and C. Fallon surveyed for *F. davisi* in two additional streams in the Cascade Siskiyou National Monument, detailed below.

SITES 1 – 3: BALDY CREEK

SURVEY TIME: 12:04 PM – 2:35 PM

Habitat description: The upstream survey section of the creek is composed almost entirely of bedrock with some rocks and larger boulders as well as waterfalls and deeper pools. Small pockets in the bedrock hold sand particles. Further downstream (closer to the road) the substrate is more varied and includes boulders, cobble, gravel, sand, and some exposed bedrock. Vegetated margins composed of grasses, mosses, coltsfoot, willow, snowberry, thimbleberry, rose, salmonberry, oceanspray, mock orange, horsetail ferns, Ranunculus, yarrow, delphinium, cow parsnip. Tree canopy mostly cedar, bigleaf maple, hemlock, some Doug-fir. North side of creek sloped steeply and very seepy – lower stretches are spongy to walk on. This creek has an incredibly high number of planarians, with some rocks holding 30 or more individuals. Downed logs are present throughout the survey stretch. Many small dark brown caddisflies (*Wormaldia occidea*) were observed flying over the creek and in streamside vegetation during the last hour of surveys in what appeared to be an emergence event. Creek water temperature was 9° C (48° F). Water depth ranged from a couple centimeters to half a meter. Stream width varied from 0.5 to 5 meters wide.

Human impact: Creek is redirected through a culvert below Baldy Creek Rd.

Collections: We collected one female specimen each of *Rhyacophila norcuta* and *R. oreta*, as well as one larval *Micrasema* at Baldy Creek 2. At Baldy Creek 3 we collected 4 male *Wormaldia occidea* adults, one adult male *R. norcuta*, 3 larval *Micrasema*, and several empty sand cases that may belong to the genus *Lepidostoma*.

SITES 4 – 6: UNNAMED CREEK

SURVEY TIME: 2:56 PM – 5:02 PM

Habitat description: Several cascading small waterfalls and large Douglas-firs at this site. Streamside is vegetated with large Douglas-firs and surrounded by large boulders covered in moss with a plant community composed of thimbleberry, coltsfoot, red cedar saplings, and roses. Downed logs across the stream. Small side channel entering creek at upstream section. Small hemlock shades the stream in the riparian zone. Some algae are present on rocks in the pools below small waterfalls. Creek is dense with firs on upstream section. This is a fast flowing creek with moderate gradient and small cascades over boulders. Substrate also includes cobble, gravel, sand, and some exposed bedrock. Water temperature varied from 9-10° C (48-50° F). At the site closest to the road the canopy is very open with abundant horsetail ferns, cow parsnip, reeds, thistle, and ranunculus. The margins of the stream in this section have Douglas-fir, bigleaf maple, currant, willow, and alder. The stream bank is eroded in places, exposing tree roots and bedrock. Water depth varies from 2-3 meters. Stream depth ranges from a couple centimeters to half a meter.

Human impact: The creek has been redirected under the road through a culvert. The site is adjacent to a gravel road.

Collections: From the first Unnamed Creek site we collected a single adult female of *Dolophilodes dorcus*. At Unnamed Creek 2 and 3 we collected several empty sand cases. At Unnamed Creek 3 these sand cases potentially belong to *Namamyia plutonis* (an OR-SEN species); Bob Wisseman notes these determinations are tentative as no animals were available for examination and positive identification cannot be made with the cases alone.

FUTURE RECOMMENDATONS

Although we did not find the target species during 2014 surveys at Emigrant Creek, future surveyors may want to visit other reaches of this creek, as the sites that were surveyed appeared to have relatively abundant populations of larval caddisflies and the appropriate habitat characteristics. Chris Volpe also suggested that we survey Green Mountain Creek, which could have appropriate habitat for this species but is less easily accessible. Future surveys would ideally span a longer period of time to better catch the short emergence period of this species. Although most *Farula* adults in Oregon are active from April through July, the type series for this species was collected in the fall, and future surveys should include this time period. Surveys farther away from roads and culverts may also prove more successful. Because *Farula* species are associated with cold water streams, we focused on this habitat feature, but future surveys could investigate marshes in the area to see if this is better suited to the species (as suggested in the vague type locality information). Appropriate sites on nearby Forest Service lands should also be surveyed. Steve Brazier (fisheries biologist, RRS NF) suggested some higher elevation sites on the South Fork Little Butte drainage, particularly tributary streams to the South Fork, such as Dead Indian Creek and Grizzly Creek. The East Fork and West Fork Ashland Creek could also be surveyed in future years.

AGAPETUS DENNINGI

SITE SELECTION

Denning's agapetus caddisfly is known from a single collection made before 1951 in the Rogue River Siskiyou National Forest (Jackson Co.). One additional possible specimen (a pupa) was collected by Bob Wisseman in the Umpqua National Forest at Castle Rock Creek in 1999; however, this specimen cannot be positively identified without additional collections. No habitat associations are known for this species. Other species of *Agapetus* seem to prefer small to mid-size, forested streams with partial shade (Wisseman 2014, pers. comm.). They are usually found on cobble in faster water.

The Species Fact Sheet for this species (Foltz 2008) recommends focusing "initial survey efforts on Castle Rock Creek in the Umpqua National Forest and on mid- to large streams in the Rogue River National Forest." The Rogue River Siskiyou NF is a large forest in southwest Oregon spanning both the western Cascades and a section of the Klamath-Siskiyou Mountains with many streams and tributaries. Selecting potential sites to visit for these surveys was daunting given the large area, the incredibly vague collecting data for the type specimen, and our limited survey time (less than 2 days). We consulted with Steve Brazier (fisheries biologist, Rogue River Siskiyou National Forest) to select high quality sites in the High Cascades Ranger District that share habitat characteristics similar to other *Agapetus* species. We focused on the High Cascades RD because of its proximity to Castle Rock Fork and the fact that we had less than one day to conduct surveys in this forest. Based on our consultation, we selected two creeks: Muir Creek and Foster Creek. Both of these sites and the Castle Rock Fork site were between 2,000 and 4,100 feet elevation. We also opportunistically sampled two lower elevation sites that were on the way home each evening: the South Umpqua River (UMP) and Panther Creek (UMP), located between 1,300 and 1,970 ft. elevation.

SURVEY PERIOD

The type specimens for this species were collected on an unknown date before 1951. The closely related caddisfly *A. tahoe* has a late summer and early fall flight period, so given this information and the warmer than usual summer, we decided to survey for *A. denningi* in mid-August.

SAMPLING METHODOLOGY

We followed the general Trichoptera and species specific survey protocols for *A. denningi* developed by Foltz (2008). The general sampling methodology for this species was the same as that outlined for *F. davisi* above.

SURVEY RESULTS

A table of known records for this species is available in Appendix I. See Appendix III for a table of all sites surveyed in 2014. A map of the 2014 survey sites is available in Appendix IV. Below, we provide photos and a brief description of each site visited, moving in chronological order.

AUGUST 12, 2014: UMPQUA NATIONAL FOREST

On August 12, C. Fallon and M. Blackburn surveyed for *A. denningi* along the Castle Rock Fork in the Umpqua National Forest. A second survey along the South Umpqua River was attempted but cut short due to heavy thunder and lightning storms.

SITE 1: CASTLE ROCK FORK

SURVEY TIME: 3:28 PM – 4:30 PM (62 minutes)

NOTE: When we first arrived at this site (around 2:00pm), a huge thunder and lightning storm rolled in, preventing us from starting these surveys. We did not begin surveys until the storm had passed a safe distance away and the intense, heavy rain had stopped. Very few flying insects of any species were observed after the storm, and a light misty rain continued to fall throughout the survey.

Habitat description: Partially open mixed coniferous/deciduous forest of alder and Douglas-fir. Fast-flowing stream with large rocks and boulders and some exposed bedrock. Streamside vegetation includes vine maple, horsetail ferns, stinging nettle, tiger lilies, sword fern, Indian plum, and gooseberry. Nostoc algae are present on rocks throughout the survey stretch. Water flow was fast in this creek. The survey area ranged from approximately 7 centimeters to one meter in depth and 8-15 meters in width. Our survey area was bookended by two very deep pools. Substrate composed primarily of rock, boulder, and bedrock. Water temperature was 16° C (60° F). *Juga* sp. were found on rock surfaces in slower areas of the creek.

Human impact: The creek runs alongside FS Rd 2830, flowing below a bridge next to a temporary camp that appeared to have been recently used.

Collections: We collected 8 unknown larvae, 1 adult male of *Rhyacophila vedra*, and 3 *Glossosoma* pupae.

SITE 2: SOUTH UMPQUA RIVER

SURVEY TIME: 5:41 PM – 5:46 PM (5 minutes)

NOTE: This is an opportunistic site we decided to stop at after leaving the Castle Rock Fork site. Unfortunately, heavy rains and more thunderstorms forced us to leave the site after only a few minutes. Heavy rains continued to occur throughout the area all evening and into the next morning.

Habitat description: Mixed deciduous/coniferous forest with fast flowing water. Bedrock walls with moss, small pools, waterfalls, riffles. Streamside vegetation includes sedges, willow, and alder, with a canopy of Douglas-fir, vine maple, and bigleaf maple. Nostoc algae are present on rock surfaces. Substrate includes boulders, cobble, and sediment. Water depth varies considerably, from less than a meter to several meters in the deeper pools. Stream width is 10-15 meters. Water temperature at the site was 16° C (60° F).

Human impact: Adjacent to a campground (Camp Comfort). There is a trail leading from campsite #2 down to the access point for the start of our surveys.

Collections: We collected one female pupa of *Rhyacophila vedra* and one *Glossosoma* larva.

AUGUST 13, 2014: ROGUE RIVER SISKIYOU AND UMPQUA NATIONAL FORESTS

SITE 1: MUIR CREEK, EAST FORK

SURVEY TIME: 9:54 AM – 10:24 AM (30 minutes)

NOTE: Water flow at this site is very fast, and water levels appear much higher than would be expected this time of year. We suspect that the intense rainstorms in the area have caused the creeks to run higher than usual.

Habitat description: Muir Creek is a mid-sized perennial stream flowing south into the Rogue River. The creek bed is composed primarily of sand, gravel, and cobble. Streamside vegetation is dominated by shrubs (willow, alder, and some spiraea), although openings in the shrubs host a variety of smaller forbs, including lupine, clover, paintbrush, delphinium, asters, nettle, fireweed, sedges, and bracken fern. The surrounding forest is mostly conifers. A smaller stream flows into this creek at the survey site and is dominated by skunk cabbage. Thick algal growths are present on rocks midstream. Water temperature at time of survey was 16° C (60° F). Water depth was approximately 0.5 – 1 meter and stream width was 3-6 meters.

Human impact: Adjacent to a dirt road and upstream of a very large culvert. There is a temporary camp/truck trail by the access point for this site.

Collections: We observed some empty caddisfly larvae cases (potentially *Agapetus* sp. - tortoiseshell type) in the stream but no live caddisflies. No collections were made at this site.

SITE 2: FOSTER CREEK

SURVEY TIME: 11:10 AM – 12:00 PM (50 minutes)

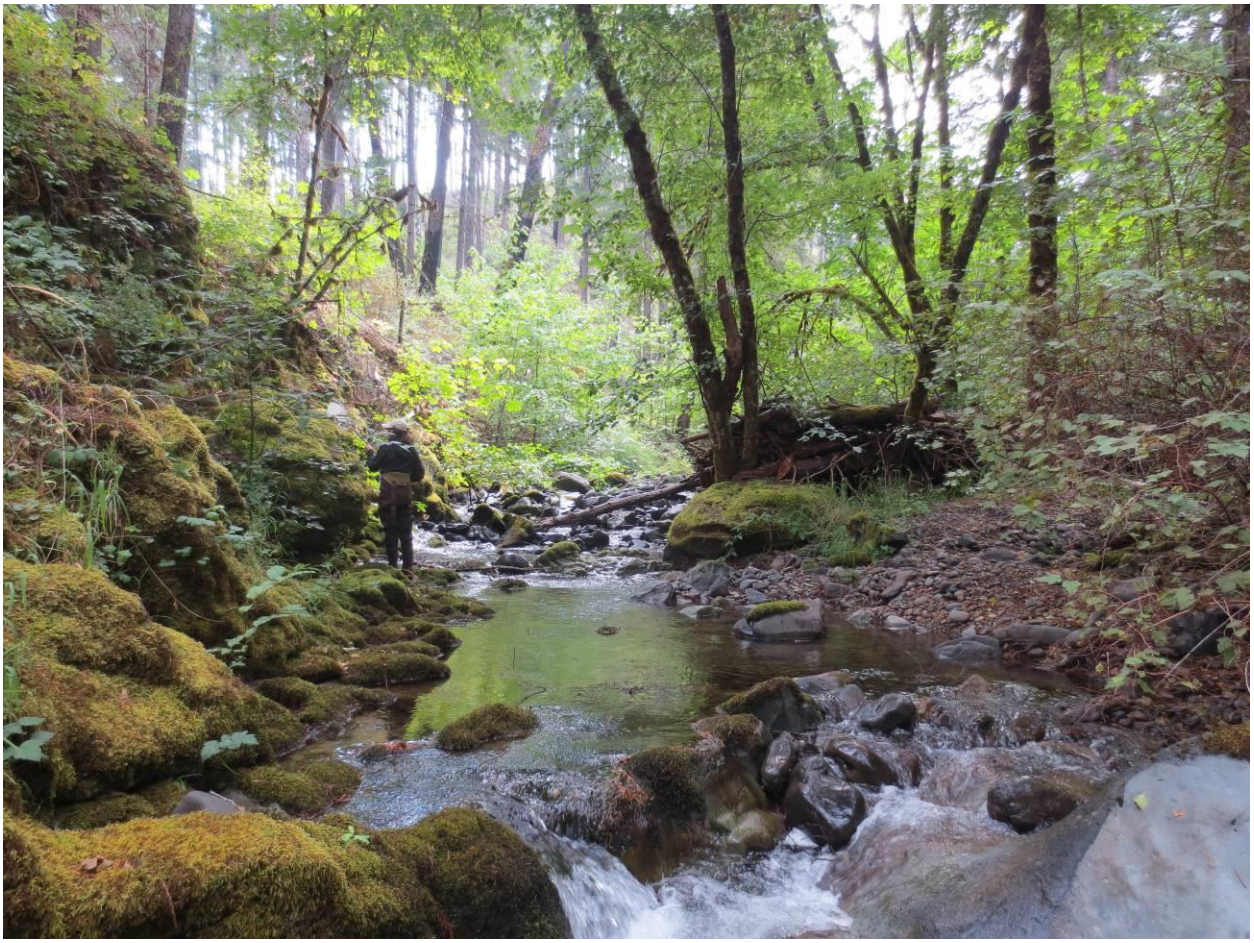
NOTE: Intermittent rain fell throughout the survey period, which made adult surveys difficult. We spent much of our time looking for immature stages of *Agapetus* and searching for adults taking refuge in streamside vegetation.

Habitat description: Very open, rocky creek with margins dominated by large willow and alder shrub thickets. Openings in the shrub margins were populated by lupine, nettles, asters, and some dogwood. Tall Douglas-firs and western red cedars were present farther back behind the shrub zone. Nostoc algae and green filamentous algae were present on rocks all throughout the survey site, making the substrate very slick. Stream width ranged from 6 to 10 meters and water depth was from 15 to 30 centimeters. Substrate was rocks, cobble, and small boulders. Water temperature was 13° C (56° F).

Human impact: This site is accessible from a FS road, and a small pullout with tire tracks is evident near the creek. The downstream end of the survey site has been dammed with rocks to make a shallow pool.

Collections: Many tortoiseshell case maker larvae were found all throughout this creek. We collected 3 female pupae and 1 larva of *Agapetus* spp., 5 larvae of *Micrasema*, and 2 larvae of *Glossosoma*.

SITE 3: PANTHER CREEK (UMP)



SURVEY TIME: 2:31 PM – 3:41 PM (70 minutes)

NOTE: This is an incidental site that we happened to stop at on our way back to Portland.

Habitat description: Boulder strewn creek with bedrock, large rocks, and cobble bars. Mossy creek sides with rocks and bedrock vegetated by grasses, insideout flower, and a shrub layer of vine maple, snowberry, ninebark, Indian plum, and hazelnut. Tree overstory composed of alder, conifers, and bigleaf maple. Stream width 3-6 meters and water depth 15 centimeters to 1 meter. Water temperature was warm at this lower elevation, at 17° C (62° F). Medium water flow over bedrock, rock, and cobble bars creates small waterfalls and riffles. Thin algal layer present on most rocks in stream, and Nostoc algae and some green filamentous algae observed. *Juga* sp. are abundant at this site, at times coating rock surfaces. A gilled Pacific giant salamander was observed in addition to several crayfish, water striders, small fish, and a couple of water pennies (Coleoptera).

Human impact: This site is just south of Highway 138 in a major recreational area.

Collections: Many caddisflies were observed flying in sunlit areas. We collected adult representatives of two common species: *Wormaldia gabriella* (two males) and *Rhyacophila vedra* (3 males and 1 female). No tortoiseshell case maker larvae were observed, although we did see some net spinners and rocky case maker larvae.

FUTURE RECOMMENDATONS

The vague locality description of the single known *A. denningi* specimen ("Rogue River National Forest") and the lack of any habitat information make site selection for this species very difficult. We recommend identifying additional streams throughout the Umpqua and Rogue River Siskiyou National Forests that have mixed deciduous-coniferous canopies with cobble/boulder/bedrock substrates. Many streams in the High Cascades RD of the Rogue River Siskiyou NF appear somewhat fine bedded due to Mazama ash and pumice geology (Brazier 2014, pers. comm.) and may not be ideal of this species. However, if other surveys target this area of the forest, the Middle Fork Rogue River and South Fork Rogue River both have cobble/boulder beds that may prove appropriate for this species. In addition, the South Fork and North Fork of Little Butte Creek also fit the above characteristics. Another visit to Castle Rock Fork during better weather and along a longer survey stretch would be useful for collecting more *Agapetus* species to determine if *A. denningi* is in fact present in this stream. Foster Creek was the only stream surveyed in which we found immature *Agapetus*; this creek could be resurveyed to collect adults for positive identification. In addition, reexamination of the type specimen against other *Agapetus* species may be warranted, as suggested by Bob Wisseman (Foltz 2008, NatureServe 2014).

ACKNOWLEDGEMENTS

We are grateful to Christopher Volpe (Medford BLM) for recommending sites to survey in the Cascade Siskiyou National Monument and for providing maps to those sites. Bob Nichols (UMP) provided road condition updates for the Castle Rock Fork area and Steve Brazier recommended sites to survey in the Rogue River Siskiyou NF. *Farula davisi* specimens were collected under permits granted by the Medford BLM / Cascade Siskiyou National Monument (issued 6/11/14). We thank Robert Wisseman for identifying all caddisfly specimens collected for this project and for providing advice on surveying for these two species. We also thank Sarina Jepsen for review of this report.

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APPENDIX I: SPECIES RECORDS IN OREGON

Species	UTME (NAD83, Zone 10)	UTMN (NAD83, Zone 10)	Location accuracy	State	County	Location	Habitat	Date	Observer	Notes
Agapetus denningi	537687.5	4744927	VAGUE	OR	Klamath? Jackson?	Rogue River National Forest	Unknown	before 1951	Unknown	Wisseman (2008) suggests the material is in need of re-examining for confirmation of ID.
Agapetus denningi	534903	4772289	MAN6	OR	Douglas	Castle Rock Creek at biomonitoring station for Umpqua NF.	Cold, clear stream	7 Oct 1999	R.W. Wisseman	1 male pupa. This is a tentative record.
Farula davisi	540583.9	4664143	MAN6	OR	Jackson	Green Springs Mountain, 10-12 miles E of Ashland	Near small stream, across road from marshy area	Fall 1950	J.E.Davis	2 Adult M (the type series and only known records). Anderson (1976) apparently misprinted the collection year as 1960.

APPENDIX II: *FARULA DAVISI* SITES SURVEYED IN 2014

* Surveyors surveyed an area approximately 30 m out from each stream segment.
Target species or other species of note are in **bold.

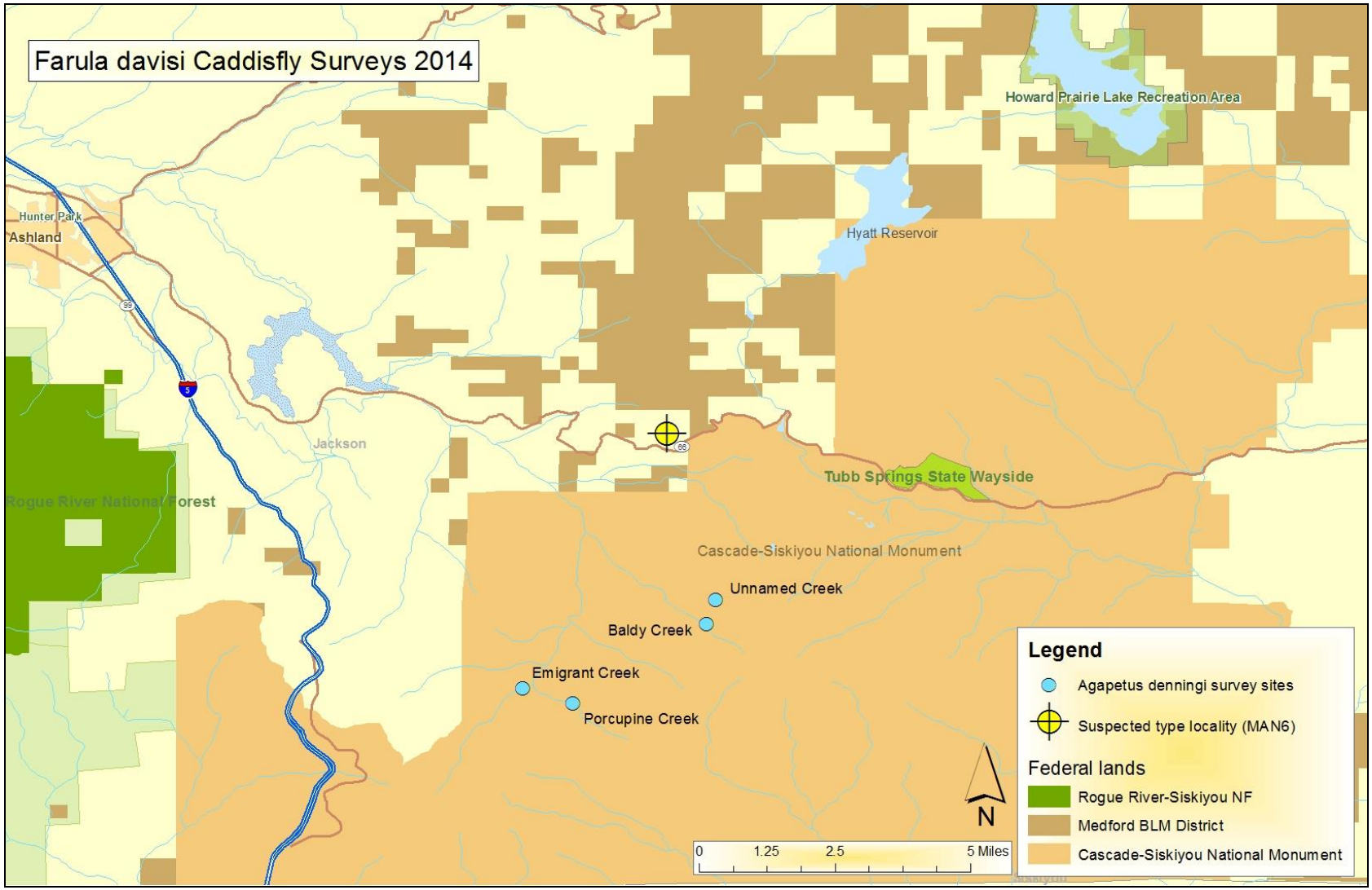
Survey Date	Forest or District	County	Survey site	Elev. (ft)	Stream segment length (m)*	UTME (WGS84, Zone 10)	UTMN (WGS84, Zone 10)	Species collected**
24-Jun-14	Medford BLM	Jackson	Emigrant Creek 1	3475	26.1	537432.9	4656579.9	None
24-Jun-14	Medford BLM	Jackson	Emigrant Creek 2	3469	34.7	537459.4	4656600.6	*Lepidostoma* sp. (2 larvae)
24-Jun-14	Medford BLM	Jackson	Emigrant Creek 3	3455	19.7	537497.1	4656608.0	None
24-Jun-14	Medford BLM	Jackson	Emigrant Creek	3517	41.2	537369.1	4656573.6	*Micrasema* sp. (4 larvae)
24-Jun-14	Medford BLM	Jackson	Porcupine Creek 1	3507	66.3	538392.8	4656182.8	***Namamyia plutonis*** (3 adults), *Rhyacophila ecosa* (1 adult)
24-Jun-14	Medford BLM	Jackson	Porcupine Creek 2	3790	74.9	538542.4	4656140.8	None
24-Jun-14	Medford BLM	Jackson	Porcupine Creek 3	3801	76.6	538592.8	4656108.5	*Heteroplectron californicum* (2 adults)
26-Jun-14	Medford BLM	Jackson	Baldy Creek 1	4250	24.7	541492.5	4658510.7	None
26-Jun-14	Medford BLM	Jackson	Baldy Creek 2	4273	42.5	541524.4	4658473.3	*Micrasema* sp. (1 larva), *Rhyacophila norcuta* (1 adult), *R. oreta* (1 adult)
26-Jun-14	Medford BLM	Jackson	Baldy Creek 3	4247	35.0	541502.6	4658493.5	*Wormaldia occidea* (4 adults), *Micrasema* sp. (3 larvae), *Rhyacophila norcuta* (1 adult), possibly *Lepidostoma* (empty cases)
26-Jun-14	Medford BLM	Jackson	Unnamed Creek 1	4302	49.0	541525.6	4658518.5	*Dolophilodes dorcus* (1 adult)
26-Jun-14	Medford BLM	Jackson	Unnamed Creek 2	4351	14.6	541700.8	4659232.6	Unknown (empty cases)
26-Jun-14	Medford BLM	Jackson	Unnamed Creek 3	4360	21.4	541726.2	4659220.7	Potentially ***Namamyia plutonis*** (empty cases)

APPENDIX III: *AGAPETUS DENNINGI* SITES SURVEYED IN 2014

* Surveyors surveyed an area approximately 30 m out from each stream segment.
Target species or other species of note are in **bold.

Survey Date	Forest or District	County	Survey site	Elev. (feet)	Stream segment length (m)*	UTME (WGS84, Zone 10)	UTMN (WGS84, Zone 10)	Species collected**
12-Aug-14	Umpqua NF	Douglas	Castle Rock Fork	2030	84.7	533766.0	4772791.5	*Glossosoma* sp. (8 larvae, 3 pupae), *Rhyacophila vedra* (1 adult)
12-Aug-14	Umpqua NF	Douglas	South Umpqua River	1965	19.6	532869.0	4772552.6	*Rhyacophila vedra* (1 pupa), *Glossosoma* sp. (1 larva)
13-Aug-14	Rogue River Siskiyou NF	Douglas	Muir Creek, East Fork	4090	27.9	553632.4	4769507.7	None
13-Aug-14	Rogue River Siskiyou NF	Douglas	Foster Creek	3768	56.1	549515.3	4764561.7	***Agapetus*** sp. (3 pupae, 1 larva), *Micrasema* sp. (5 larvae), *Glossosoma* sp. (2 larvae)
13-Aug-14	Umpqua NF	Douglas	Panther Creek	1327	53.4	525814.9	4794381.9	*Wormaldia gabriella* (2 adults), *Rhyacophila vedra* (4 adults)

APPENDIX IV: MAPS OF 2014 SURVEY SITES



Agapetus denningi Caddisfly Surveys 2014
Lane
Summit Lake
Crescent Lake
Panther Creek
Toketee Reservoir
Lemolo Lake
Douglas
Diamond Lake
South Umpqua River
Castle Rock Fork
Muir Creek
Foster Creek
Klamath
Crater Lake
Legend
Agapetus denningi survey sites
Federal lands
Bureau of Land Management
Umpqua NF
Rogue River-Siskiyou NF
Crater Lake National Park
N
0
3.75
7.5
15 Miles