

ISSSSP Final Report

Rare *Carex* Inventory in Fens and High Elevation Wetland Habitat, 2018

Willamette and Deschutes National Forests

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Unnamed meadow in Mt. Jefferson Wilderness, Detroit RD, Willamette NF

Introduction

Wetland habitats in general are listed as priority botanical survey areas for the Willamette and Deschutes National Forests. These habitats are seldom surveyed outside of project areas primarily due to lack of funding and time. With so many of our Sensitive *Carex* existing in mid to high elevation wetlands, botanists are left with minimal information and understanding of their distribution in Wilderness areas. This project was designed to help determine the abundance and distribution of these rare sedges, as well as increase knowledge of and identification skills for these species.

Although rare sedges were identified as the target group, many other Sensitive species occur in similar habitats and were surveyed simultaneously. Willamette NF botanists have surveyed many of their high elevation wetland habitats but have not conducted comprehensive surveys and used this opportunity to fill data gaps.

Below in Table 1 are the six *Carex spp.* that were surveyed for which are currently on the Regional Forester's Sensitive Species List (FSM 2670.44, Dec. 2011) for the Deschutes National Forest and the Willamette National Forest, as follows (BFR = Bend/Fort Rock District, CRE = Crescent District, SIS = Sisters District, MR = McKenzie River District, DE = Detroit District). Listing status from July 2015 Regional Forester's Sensitive List. All species exist in wet meadows.

Table 1. Rare *Carex spp.* documented or suspected on the Deschutes and Willamette NF's; from the Regional Forester's Sensitive Species list (FSM 2670.44, Dec. 2011)

Scientific Name	Common Name	Listing Status and Heritage Rank	Forest/District				
			Deschutes			Willamette	
			BFR	CRE	SIS	MR	DE
<i>Carex capitata</i>	Capitate sedge	ORBIC List 2; FS Sensitive; G5S2	D	D	D	S	S
<i>Carex diandra</i>	Lesser paniced sedge	ORBIC List 2; FS Sensitive; G5S1	S	S	S	D	S
<i>Carex lasiocarpa</i> var. <i>americana</i>	Slender sedge	ORBIC List 2; FS Sensitive; G5T5S2	D	S	S	S	S
<i>Carex livida</i>	Pale sedge	ORBIC List 2; FS Sensitive; G5S2	S	S	S	D	S
<i>Carex retrorsa</i>	Retrorse sedge	ORBIC List 2; FS Sensitive; G5S1	S	S	S	NA	NA

<i>Carex scirpoidea</i> <i>var. stenochlaena</i>	Alaskan single-spiked sedge		NA	NA	NA	D	S
<i>Carex vernacula</i>	Native sedge	ORBIC List 2; FS Sensitive; G5S2	S	S	S	S	S

CODES: D = Documented S = Suspected

Background

While writing the proposal for this project, a *Carex diandra* site was found in the Oregon Biodiversity Information Center (ORBIC) GIS layer file on the Deschutes. The site was shown as located within the Newberry National Volcanic Monument on the east side of the Bend/Ft. Rock District. It had not been verified by a National Forest Botanist, and, therefore, was included as a site to relocate. On the Willamette, there are two documented sites of *C. diandra* on the McKenzie District. The potential to find more was thought to be high, as it is documented in bogs and fens in the Cascades of WA and OR and even worldwide in diverse wetlands.

As for surveys on the Deschutes NF, Rick Dewey (retired Deschutes NF Botanist and regional fen expert) has conducted extensive wetland surveys throughout the Deschutes Districts, with a focus on identifying fens. During his time surveying these areas, he spent the majority of his time in the very saturated zones and, therefore, considers the drier edge, or transitional zones, as an area in need of inventory. These transitional zones, areas that are not quite upland but seasonally moist, are where he described finding a diversity of *Carex* species, with a high probability of finding one or more of the listed *Carex*. *Carex capitata* and *C. lasiocarpa* have both been documented within this edge habitat.

Overall, the ecosystems that these sedges inhabit are unique, species rich, and face many threats from natural and human caused factors. Both the Deschutes and Willamette receive high visitation through recreation, which in some cases leads to the degradation of the natural setting; therefore it was encouraged to look for and document impacts from recreation.

Drought and climate change are yet other major issues that are threatening these habitats. As we are already witnessing the impacts of climate change in this area, these surveys will be important in the future for providing important baseline data upon which to measure future assessments of *Carex* habitat.

Methods

Inventories were conducted in potential habitat on all three districts of the Deschutes NF, and on the McKenzie River and Detroit Districts of the Willamette NF. Sites were chosen according to habitat and history of surveys in the area. Referencing ArcMap layers or Google map imagery was helpful in locating the dark green patches that indicate wetland or wet meadow habitat.

Surveys were conducted using the intuitive controlled method while the plants were fruiting to aid with keying and proper identification. Depending upon elevation, surveys were conducted late August

through late September 2018. Photos were taken of each site and species' lists were recorded and documented by the District Botanist.

Results

Only a few new sites of rare sedges were found and those were located by none other than the fen expert, Rick Dewey. He located four new sites of *Carex capitata* on the Sisters district on the Deschutes NF in addition to locating a new population of *Scheuchzeria palustris ssp. americana*, a Sensitive forb; more information is provided in the Sisters District summary. Surveys by the other participating botanists were mixed and in some cases resulted in finding habitat that was too dry to support rare sedges but in other cases resulted in finding a high diversity of sedges but none of them considered rare. There were new detections of *Gentiana newberryi*, a Sensitive forb, on Bend/Ft. Rock on the Deschutes and *Rhizomnium nudum*, a Sensitive moss, on Detroit District on the Willamette; more information is provided on these detections in the respective district summaries.

Minimal recreation impacts were reported, although there were some disturbances described at Pamela Lake on the way in to Hunt's Cove on the Detroit District and some bare ground and denuding at Park Meadow in the Three Sisters Wilderness on the Deschutes NF, again with more information below.

All surveys have been entered into the NRIS database.

Willamette NF

McKenzie River District

Krista Farris and Alice Smith, District Botanists of McKenzie River RD and Sweet Home RD, respectively, surveyed wetlands and meadows in the Three Sisters Wilderness during the week of August 27, 2018. Two large meadow complexes were surveyed, these being Separation Meadows and Linton Meadows. The Rebel Fire of 2017 had burned at high intensity through most of the forest west of the meadow complexes and had even burned into some of the meadows. The trails to some of the meadows originally identified in the proposal (Indian Hole and Cole Chuck) had been burned over and not bucked out, therefore these meadows were not surveyed. Linton Meadows was substituted instead. The record hot and dry summer of 2018 had left meadow vegetation parched except in the wettest areas.

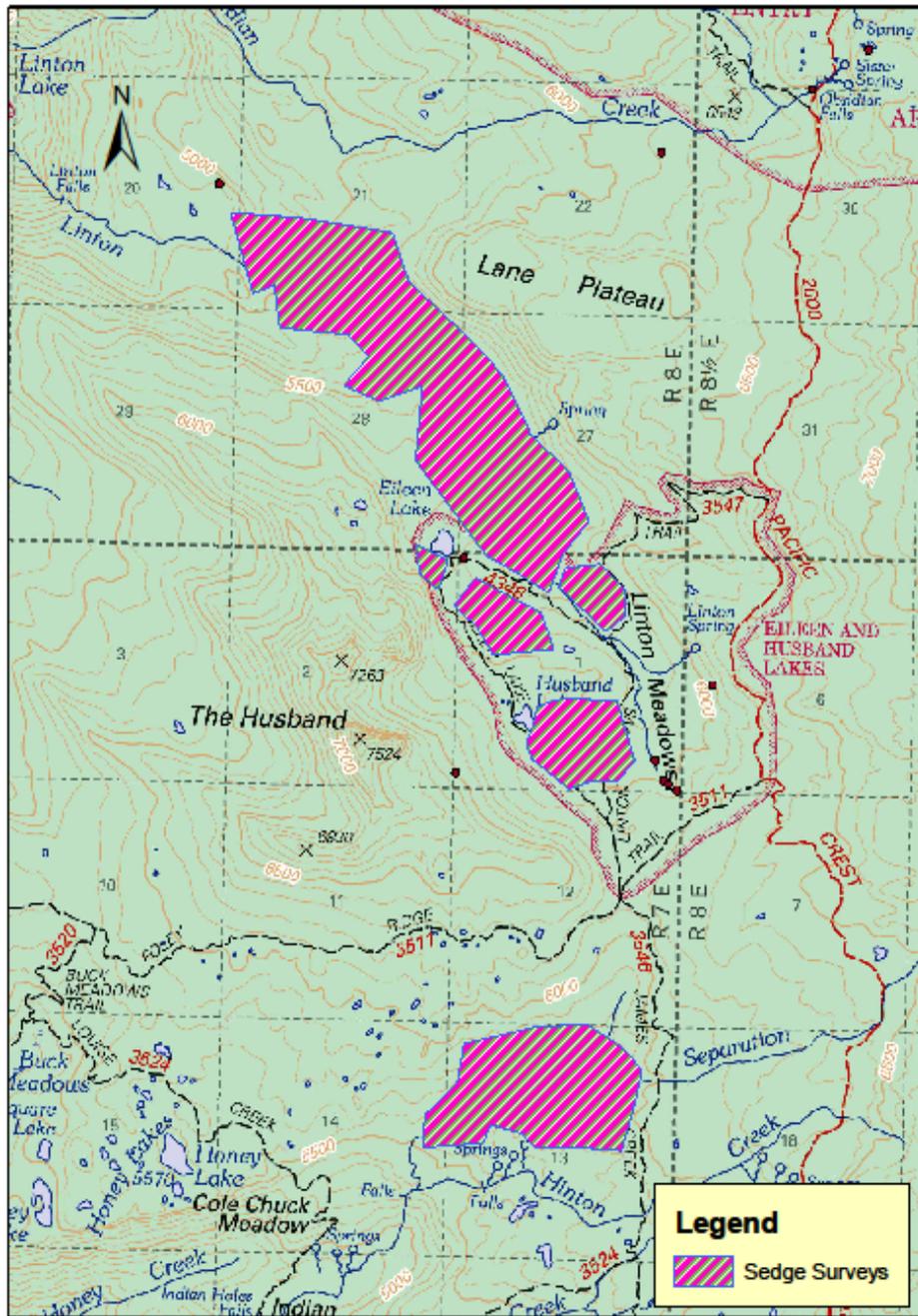
Figure 1 Alice Smith in meadow between Husband and Eileen Lake, Three Sisters Wilderness Willamette, NF



The habitat for rare sedges was generally absent from Separation Meadows. It does not have a fen or bog component. It is more of a mesic meadow with some wetter areas near the springs on the east side.

Habitat was only marginally better at Lane Plateau/ Linton Meadow complex downstream from Linton Meadow proper; it had some areas of wet meadows but, still, there was only a small pocket of sphagnum and habitat for rare sedges was very limited. The habitat in the largest meadow, Linton Meadow proper, was better and actually too wet to walk out into without tall boots and waders, dominated by *Eleocharis* sp. Ultimately, no rare sedges were found.

ISSSSP Sedge Surveys 3 Sisters Willamette NF



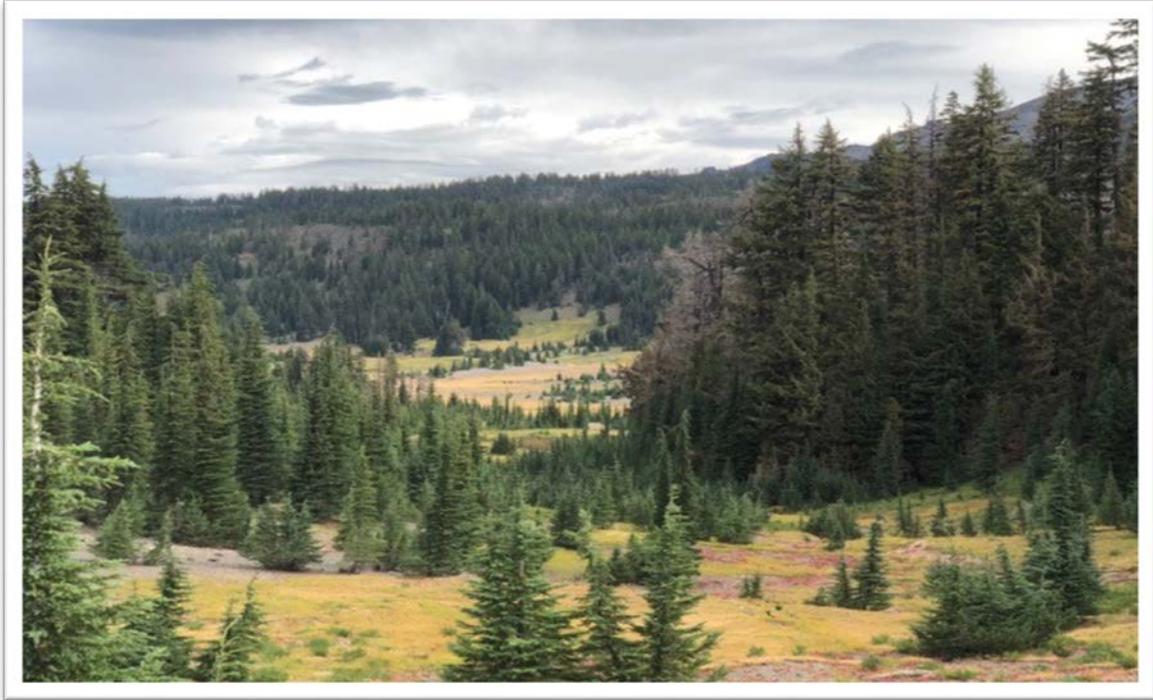


Figure 2 Linton Meadow complex, Three Sisters Wilderness Willamette NF



Figure 3 Lane Plateau along Linton Creek, Three Sisters Wilderness Willamette NF

Detroit District

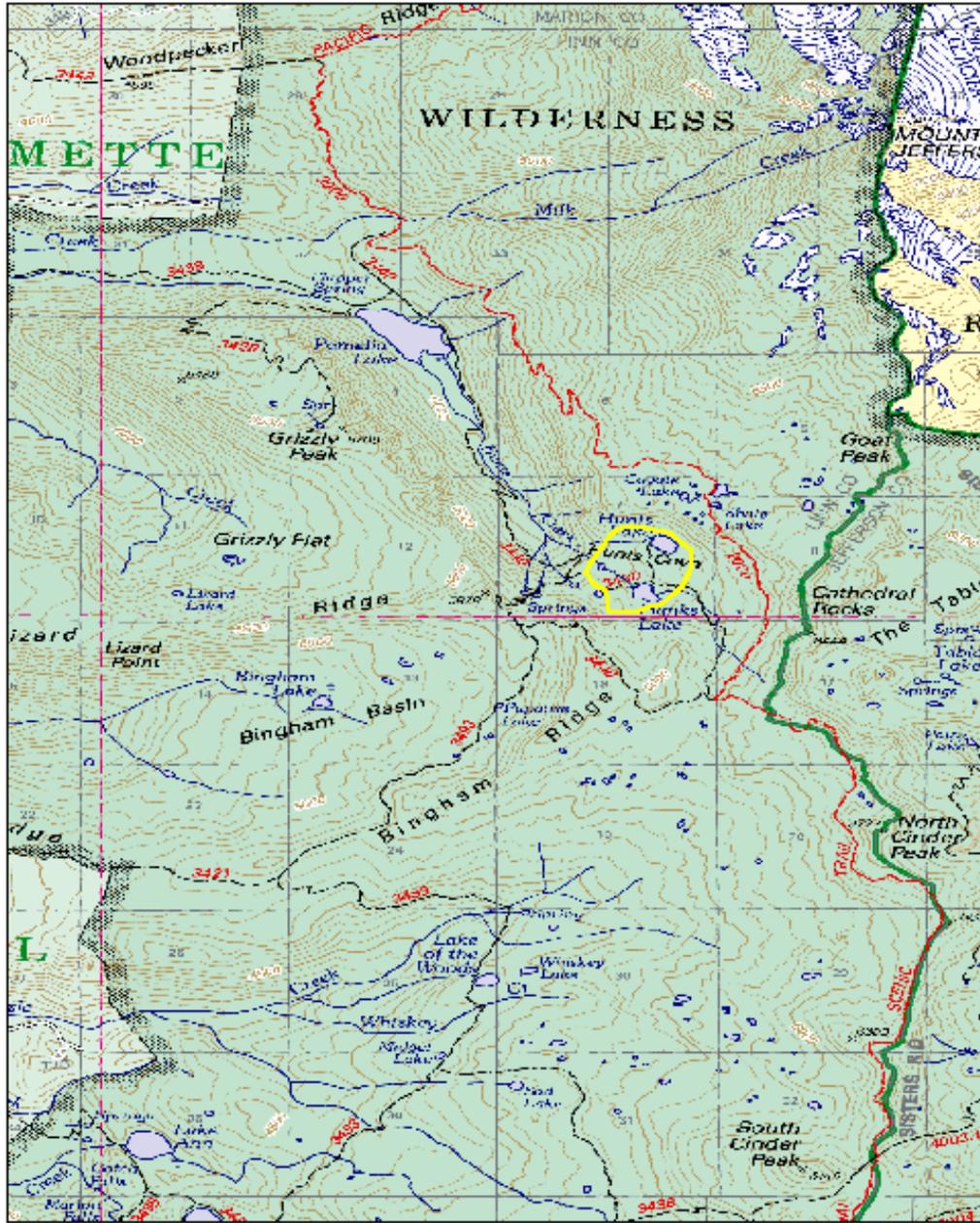
Charity Glade and Claire Bennett, District Botanist and Biological Technician of Detroit RD, respectively, surveyed wetlands and a wet meadow in the Mt. Jefferson Wilderness during the week of August 20, 2018. The Hunts Cove area was surveyed, encompassing Hunts Lake, Hanks Lake, and an unnamed wet meadow. Both lakes are lined by large swaths of unique *Sphagnum squarrosum* fen habitat for portions of their perimeters. The wet meadow does not have a *Sphagnum* component; *Carex* habitat there occurs on a gradient from upland to standing water that would have required hip or chest waders to survey. Upland species within the Hunts Cove area are also documented on the general species list.

Recreation impacts were noted at the survey site but none that had degraded the sedge habitat; it was the typical campsite ground compaction and human waste issues. More impacts were found at Pamela Lake which is on the way in and out of the Hunt's Cove area. There is reed canary grass beginning to infest the lake for which a treatment plan is being developed. There are also some closed dispersed recreation sites near the lake that have plans to be revegetated.



Figure 4 View of *Sphagnum* fen area (bright yellow-green) on the shore of Hanks Lake, Mt. Jefferson Wilderness
Willamette NF

Mt. Jefferson Wilderness Surveys for Detroit RD, Willamette NF



Hunts Cove Carex and bryo surveys

Legend

 Hunts_Cove

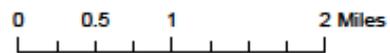




Figure 5 Carex and Sphagnum habitat on the shore of Hunts Lake

Deschutes NF

Crescent District

Christina Veverka, Crescent District Botanist, conducted surveys at the south extent of the Big Marsh wetland complex. It was selected for surveys as that area had not been previously inventoried for rare *Carex* species. (This area had been surveyed for Sensitive bryophytes with one occurrence of *Tomentypnum nitens*, a fen species that was formerly a R6 Sensitive species.) This area has sections of fen wetland habitat, which can be seen as darker areas on GoogleEarth images. Surveys were focused in these wetter areas in an effort to discover any of the Sensitive *Carex* species found within fen habitats, although none were found.

2018 Carex Surveys, Crescent Ranger District

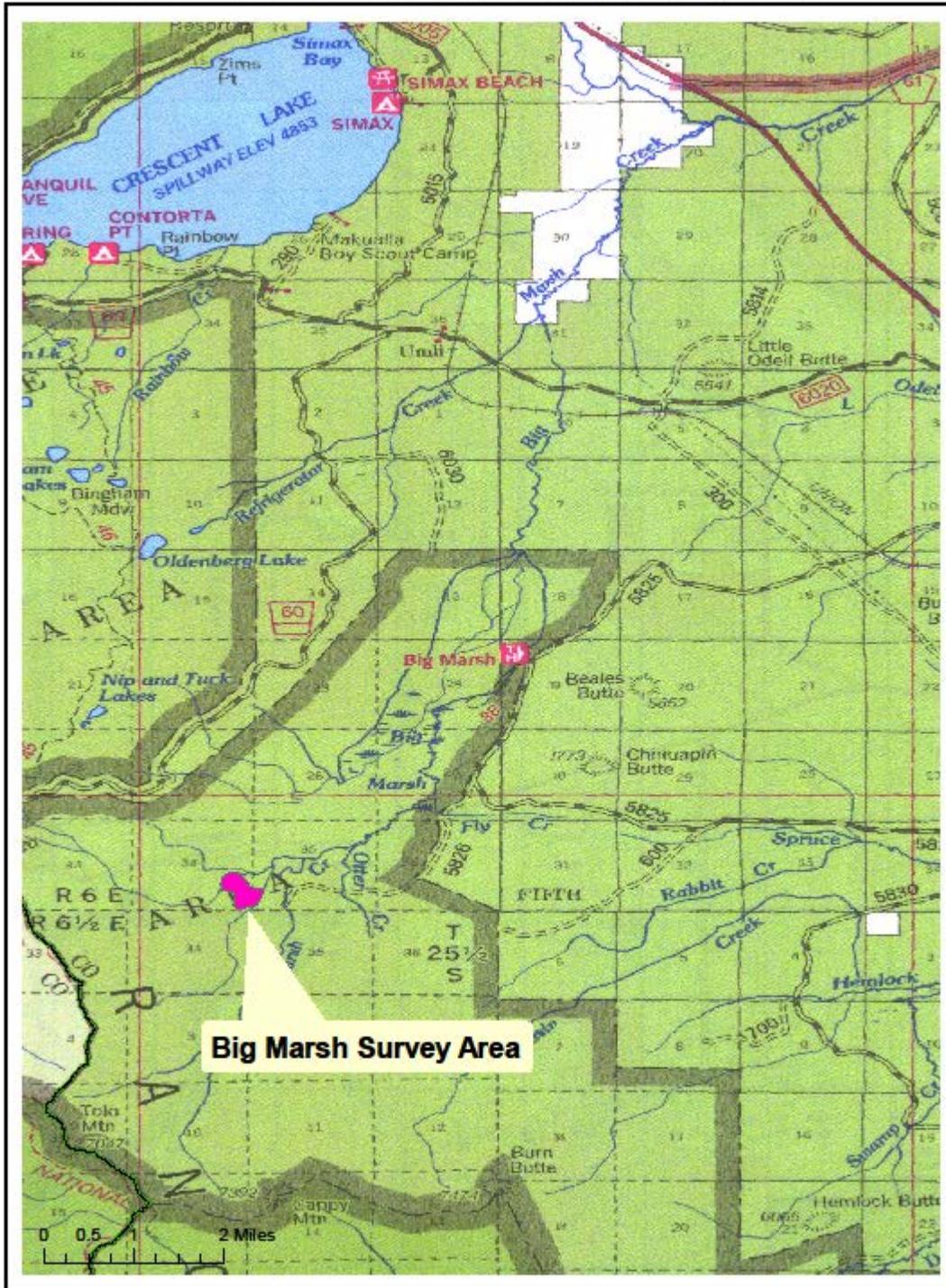




Figure 6 Botanist Beth Johnson collecting *Carex* specimens at Big Marsh

Bend/Ft. Rock District

Surveys were conducted on the Bend/Ft. Rock District by several Botanists on different outings in early August through mid-September. Crescent District Botanist, Christina Veverka, surveyed Soda Creek meadow and two un-named lakes in Three Sisters Wilderness. While no target *Carex* species were found, an abundance of graminoid species were seen including the following: *C. aquatilis*, *C. simulata*, *Juncus balticus*, and *Juncus ensifolius*.

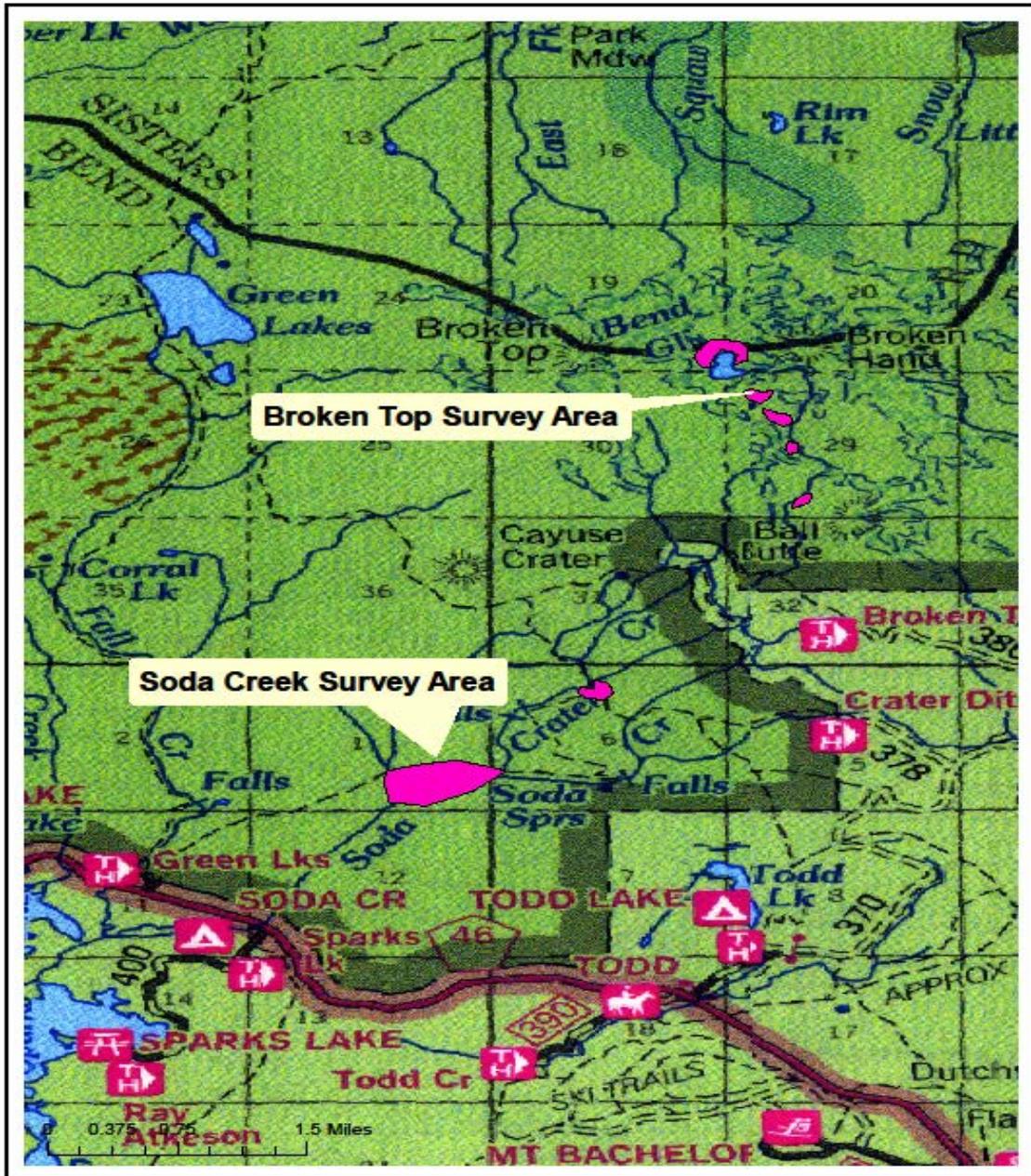
Christina also conducted a survey of the Broken Top trail and the area around Glacier Lake. No target *Carex* species were found. Those graminoid species seen included *Carex breweri*, *C. nigrescens*, *Juncus parryi*, and *Juncus mertensiana*. Of note from that trip, the upper trail area has numerous stands of white bark pine that have yet to be documented in the NRM database. Future survey work could involve mapping these stands and surveying for *Tholurna dissimilis* (urn lichen), a R6 Sensitive lichen species.

Charmane Powers, Bend/Ft. Rock District Botanist, and two botany technicians (Maddy Schriver and Conor Bidelspach) looked for *C. diandra* at Paulina Creek on 8/15/2018. The general area around the mapped ORBIC site was surveyed but *C. diandra* was not relocated.

Marlo Fisher, Bend Ft. Rock Botanist, and Jenifer Ferriel, Deschutes and Ochoco Botany Program Manager, surveyed the Irish and Taylor fen – a substitution for Bottle Creek meadow after it was identified as unsuitable habitat for rare sedges. The transitional zones were the focus of the survey but did not yield any Sensitives. Other Sensitives relocated were *C. capitata* and *Scheuchzeria palustris* ssp. *Americana*.

A group of botanists including Marlo Fisher, Charmane Powers, Jenifer Ferriel, Maddy Schriver, and Conor Bidelspach surveyed wetland areas northwest of Cultus Lake in the Three Sisters Wilderness. The area was selected for the swampy conditions and lake margins that held a higher potential for *C. livida* and/or *C. lasiocarpa* var. *americana*. A high diversity of sedges were found but none were rare.

High Elevation Meadow Surveys in Three Sisters Wilderness on
Bend/Ft. Rock District



Muskrat Lake surveys in Three Sisters Wilderness
and Irish/Taylor fen survey

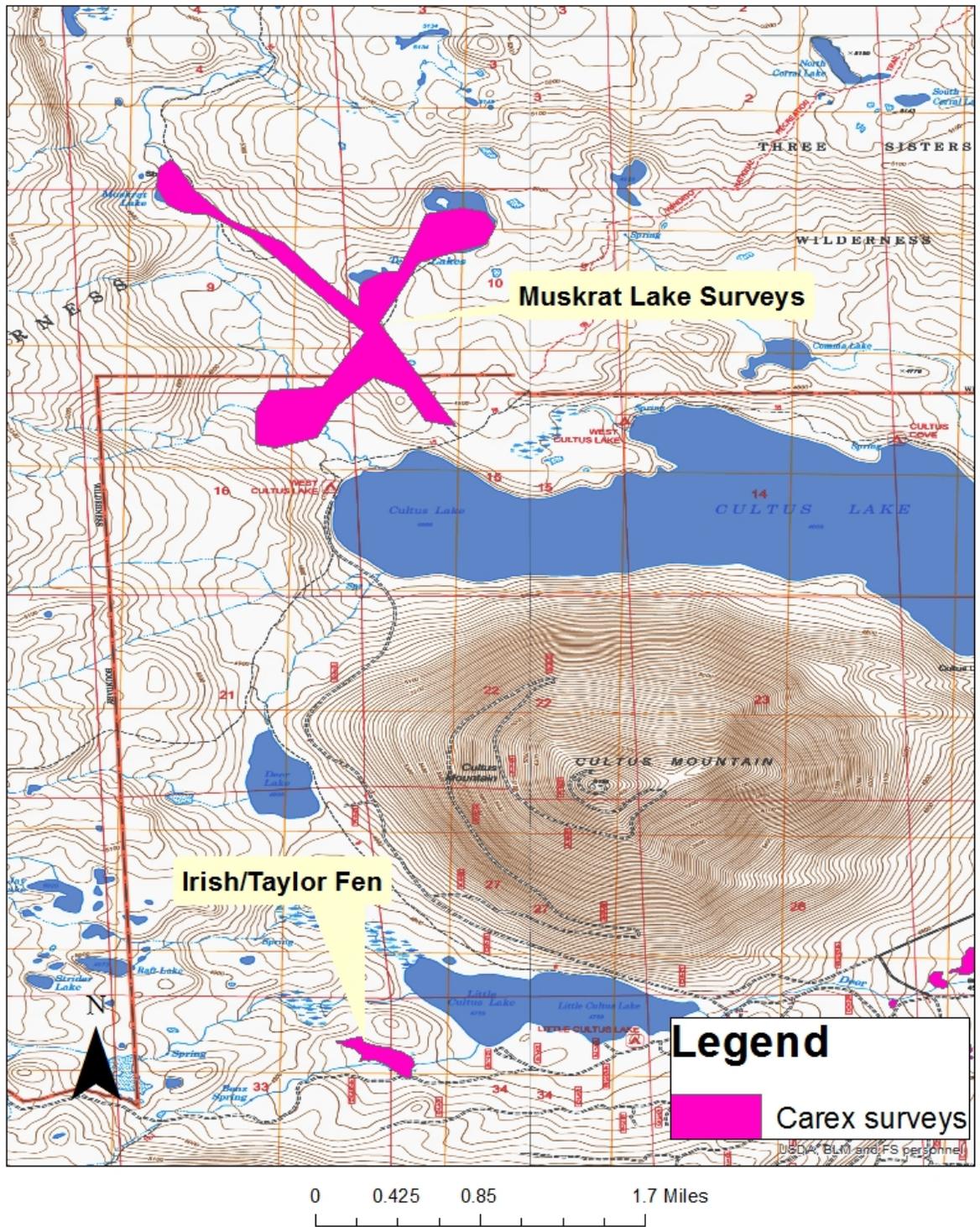




Figure 7 Soda Creek and associated meadow, Three Sisters Wilderness Deschutes NF



Figure 8 Irish and Taylor Fen, Deschutes NF

Sisters District

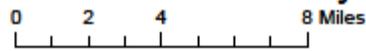
On Sisters District, surveys focused primarily on the Red Meadow and Park Meadows areas, but also included the Carl Lake area, Trout Creek Swamp, Twin Meadows Fen, Alder Creek Fen, Three Creeks Meadow, Chus Falls, Glacier Lake, and Golden Meadow. Surveys were conducted by Beth Johnson (Sisters District Botanist), Christina Veverka (Crescent District Botanist), and Rick Dewey (retired botanist, current volunteer). Additional surveys were done as part of a joint Deschutes-Ochoco botanist and biological technician training day at Three Creeks area. Members of the botany team were shown a known site of *Carex capitata* (as well as *Gentiana newberryi* var. *newberryi*) as part of the training. No new sites were detected as part of the training. However, new detections of *Carex capitata* and *Scheuchzeria palustris* ssp. *americana* were made at Trout Creek Swamp. *C. capitata* was also found at two sites at Alder Creek Fen and one site at Twin Meadows Fen. Red Meadows appeared to be high probability habitat, but none of the target species were detected. Previously unknown populations of *Gentiana newberryi* var. *newberryi* were found at both Park Meadows and at Red Meadows however.



Figure 9 *Carex capitata* at Alder Creek Fen

Sisters Surveys, Deschutes NF

2018 Carex Surveys



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Figure 10 Deschutes and Ochoco NF Botany training day at Little Three Creeks Fen, Three Sisters Wilderness Deschutes NF

Discussion

Although only a few new rare *Carex* populations were located and at that, limited to only one species, other Sensitive species were discovered while out looking. In addition to that, the botanists had an opportunity to survey sensitive habitats and learn more about their species composition. Sedge keying and identification skills were strengthened and remote areas were surveyed that do not typically get visited for this reason. Surveys on the Sisters District will likely continue by volunteer Rick Dewey as there is potential habitat that has not been inventoried yet.

References

- Dewey, Rick. Retired botanist and volunteer. Personal Communication.
- Farris, Krista. McKenzie District Botanist, Willamette NF. Personal Communication.
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- Powers, Charmane. Bend/Ft. Rock District Botanist, Deschutes NF. Personal Communication.
- Veverka, Christina. Crescent District Botanist, Deschutes NF. Personal Communication.