The Boistfort Valley: A Southwest Washington Prairie Remnant

Appendix E

This appendix is intended for public use

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Acknowledgements

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We are grateful to many residents of Boistfort – the Kellers, Mallonees, Mahlzahns, Nugents, and Roses – who have allowed access for inventory and monitoring of rare plant species on private land. Without their welcome, we would have been unable to study this diverse and unique valley.

We especially appreciate the generosity and hospitality of the three generations of the Mallonee family. They have joined us in celebrating and conserving Washington's biological diversity and have made our work in Boistfort truly enjoyable.

John and Mary Mallonee Photo by Rebecca Dare

Introduction

This primary purpose of this report is to document rare plant conservation work done in the Boistfort Valley between 2004 and 2008. In the course of this project we encountered ancillary information about the valley, including its natural history, the story of the people who passed through and settled here, and its botanical exploration. A few notes on these topics will be included here, as they illustrate the role that human activity has had on shaping the vegetation of this place.

The Washington Natural Heritage Program (WNHP) typically maintains the confidentiality of rare plant locations, both to protect this natural resource and to respect the privacy of landowners. This Appendix E has been prepared to present public information about the Boistfort Prairie.

Boistfort Valley: Historical Notes

Pre-settlement

Boistfort Valley has long stood out as distinct in its region. Early human inhabitants here, called Kwalhioqua, are reported to have been of Athapaskan ancestry, differing in language and culture from the surrounding Salishan-speaking peoples. In Washington, these "fierce mountain people", as they were regarded, lived only in the areas around Boistfort, Pe Ell, and the upper Willapa Hills (Kirk and Alexander 1990).

Estimates of when these primarily hunting and gathering people first arrived in the Valley range from as late as 3,000 years ago to as early as 9,000 to 11,000 years before the present (Kirk and Alexander 1990, Welch n.d.). People hunted, fished in the creeks and rivers, and gathered plants, including camas lily. Now limited to fencerows and marginal areas, this important food plant was abundant in the valley before agriculture was developed here. We presume that the Native American people here intentionally burned the vegetation to keep the prairies open and clear of trees, as early people did in many prairies in southwest Washington (Boyd 1986). These first people had vanished from Boistfort, due to diseases and intermarriage with other tribal groups, by the mid-1800s (Kirk and Alexander 1990).

Early European settlement

The valley was named Boistfort by Pierre Charles, of the Hudson's Bay Company, who settled there in the 1850s. The name is variously reported to be from French for "dense forest" (Kirk and Alexander 1990), to mean "a small valley surrounded by green hills" (The Daily Chronicle n.d.), or to be "a French translation of the Indian name of the oak." (Cooper 1860).

The first European settlers in the Boistfort valley were Mr. and Mrs. Charles White, who arrived in the spring of 1852 and staked out a donation land claim. Cyrus White, born to the Whites on Dec. 20, 1853, was the first child of European ancestry born in the valley. Mrs. White's mother, named Buchanan, arrived in 1853; the Buchanan donation land claim included the mound described below, now the site of the historical Boistfort cemetery (The Daily Chronical, n.d.).

In 1860 James Cooper wrote the following account of the valley:

> "We rested a day at 'Boisfort prairie', so called by a Canadian settler, the name being a French translation of the Indian name of the oak, which first appears here in going eastward. It is one of the most beautiful of the little prairies we meet, like oases, in this wilderness of forest. Oval in form, about two and a half miles long by one in width, its surface gently undulating in long, terraced slopes. Near its centre stands a remarkable mound, conical and about fifty feet high, probably formed by the action of water, though looking very much as if built purposely by ancient inhabitants for a citadel." (Cooper 1860).

Figure 1. The knoll described by James Cooper in 1860, as it appears today in Boistfort.

The mound referred to above in Cooper's account is on the Old Buchanan Donation Land Claim. An old cemetery, used by early settlers in Boistfort, and possibly by Native Americans before that, now occupies the top of the hill. Long-time residents of the valley recalled that that there were as many as 70 graves at the site, and it is reported to

have been used by the entire community between around 1855 and 1887. When the land was sold in 1887, the new owner removed the stones, plowed over the cemetery, burned the land, and refused public access. Records of the cemetery were burned in a house fire.

The recognizable dates of burial on the eleven stones that remain extend from 1865 to 1877, and include the family names Roundtree and Hogue. In 1982 the Boistfort Lions Club got permission from the owner at that time to clean up the site, build a fence, place the remaining stones, erect a cross, and build steps up the south side of the hill (Boistfort Lion's Club 2005).

In 1853 Congress set aside two townships of land to potentially be used for the University of Washington, one in Seattle, and the other in the Boistfort Valley. Seattle eventually was selected. However, the local school built in Boistfort in 1853 is reported to have been the first one in Washington Territory (The Daily Chronical, n.d.).

In the late 19th century, many of the settlers in Boistfort and neighboring Lost Valley in Lewis County immigrated from Bukovina, in what is now Romania, particularly from the village of Illischestie. Some of the family names of these early settlers from Illischestie - Ast, Roos, Rose, Keller, Knieling, Radmacher - are still evident in the existing human populations. The countryside here has been described as very similar to that in southern Bukovina (Rose 1995).

According to the late Eliza Harris Sweany, who was born at Boistfort in 1873 and died in 1968, "the prairies was 1 ½ miles long, north and south, when first seen by white men, and about a mile wide." There were no trees in the valley then, it was covered with wild grass about 18 inches high and was a beautiful sight to the settlers after a long journey. " (The Daily Chronicle, n.d.).

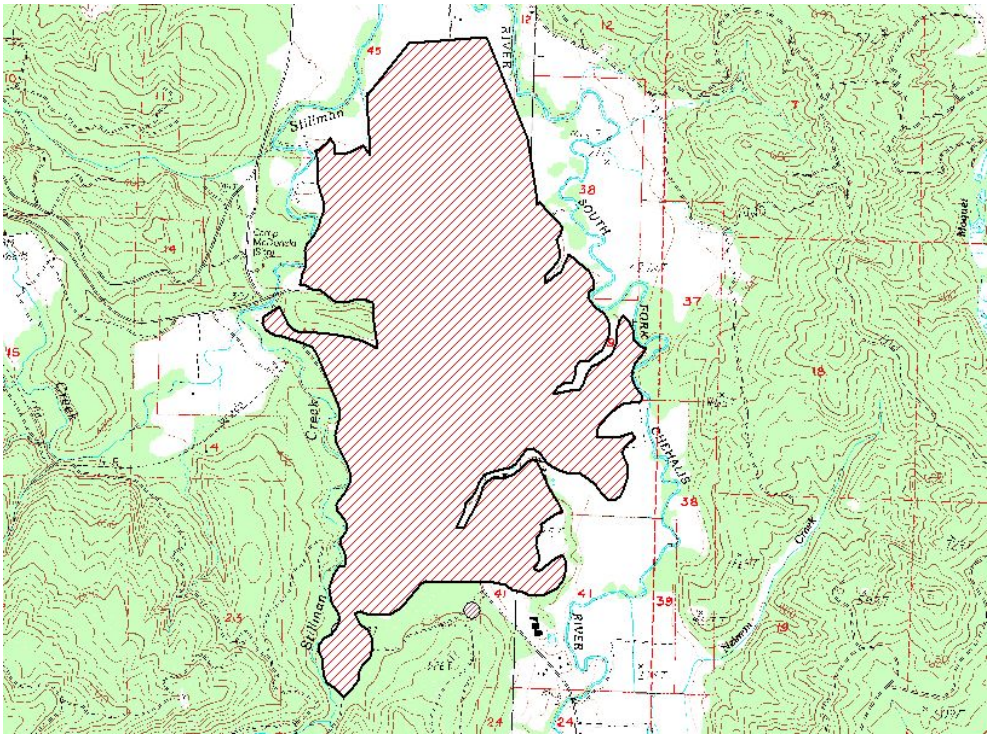

Figure 2. The historical extent of Boistfort Prairie in 1860, based on General Land Office surveys and soil types.

Settlers first farmed wheat, oats, barley, and timothy, and began to grow hops as early as 1888. Herman Klaber of Boistfort established what was called the largest hop yard and drying kiln in the US (Kirk and Alexander 1990); it attained its highest production between 1912 and 1920 (The Daily Chronicle, n.d.). Up to 2,000 farm workers came to the valley each September for the harvest. Hop tickets, earned for each 125 lb box picked, were used for currency. WW I cut off the German market for hops, which was already suffering from aphid infestations. Eventually hops growing shifted to the drier east side of the Cascade mountains. Returning from a trip to Europe, Herman Klaber was lost with the Titanic when it sank in 1912 (Kirk and Alexander 1990).

Botanical Inventory of the Boistfort Prairie

Overall, less than 3% of the native grasslands in the Puget Trough Ecoregion of Washington State remain (Caplow 2005, Chappell et al. 2001), and based on this alone, Boistfort Prairie has historical significance. In the 1980's the particular botanical richness of the Boistfort valley began to become more apparent. Cathy Maxwell, while conducting a botanical inventory of the Willapa Hills area, found populations of two Willamette Valley prairie species, Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*) and pale larkspur (*Delphinium leucophaeum*) in Boistfort (Maxwell 1991). These were the first occurrences in Washington of these two species. Kincaid's lupine was later federally listed as threatened under the Endangered Species Act (USFWS 2000). Subsequent surveys around Boistfort also revealed the presence of numerous other species with federal or state status, including federally threatened and state endangered Nelson's checkermallow (*Sidalcea nelsoniana*), state endangered thin-leaved peavine (*Lathyrus holochlorus*) and hairy-stemmed checkermallow (*Sidalcea hirtipes*), state threatened dense sedge (*Carex densa*), and state sensitive species tall bugbane (*Cimicifuga elata*), narrow-leaved mule's-ears (*Wyethia angustifolia*), and small-flowered trillium (*Trillium parviflorum*). Table 1 below presents a summary of rare plants known to occur within the Boistfort prairie and surrounding areas.

After the publication of the report on her Willipa Hills inventory, Maxwell conducted four years of detailed monitoring of Kincaid's lupine and pale larkspur, between 1991 and 1994, funded under a contract with the Washington Field Office of The Nature Conservancy (Maxwell 1991-1994). She also conducted botanical surveys there in 2002 and 2005 with WNHP staff. Maxwell observed that several of the groups of pale larkspur plants that she was monitoring between 1991 and 1994 had declined as a result of roadside and fence line herbicide spraying (see Table 3).

Numerous botanical inventories have been conducted in the Boistfort valley since Maxwell's work, and many known populations have also been monitored. The WNHP conducted monitoring and inventory work in the valley in 1989 (Gamon, with Turner and Cornelius), 2002 (Caplow), 2004 (Caplow and Maxwell), 2005 (Caplow and Maxwell),

2006 (Arnett and Birkhauser), 2007 (Arnett), and 2008 (Arnett). Richard Halse visited Nelson's checkermallow in 1997. Susan Saxton reported tall bugbane from forested land near the valley in 1994. Keith Karoly from Reed College studied pale larkspur in the valley in 2003 and 2004.

In the years between 2004 and 2008 – the emphasis of this report - additional populations of Kincaid's lupine, pale larkspur, and thin-leaved peavine were found in the valley, and the extent of these populations has been monitored and mapped. Two other species with state status were also found and documented in the valley: narrow-leaved mule's-ears and small-flowered trillium. In the process of surveys in the valley, a comprehensive vascular plant species list was prepared.

Table 1. Summary of rare plants known to occur within the Boistfort prairie and surrounding areas

scientific name	**common name**	**federal status**	**Washington state status**	**Comments on Boistfort occurrence**
Lupinus sulphureus ssp. *kincaidii*	Kincaid's lupine	threatened	endangered	One occurrence is known in Boistfort, scattered in several patches. The Boistfort occurrences is the largest by far of the three that occur in WA
Sidalcea nelsoniana	Nelson's checkermallow	threatened	endangered	One occurrence is known in Boistfort. It is the largest of two in WA
Delphinium leucophaeum	pale larkspur	species of concern	endangered	The Boistfort population, in several small patches, is the only occurrence in WA; it is rapidly declining
Lathyrus holochlorus	thin-leaved peavine	species of concern	endangered	Two patches remain in Boistfort, which contains the only known occurrence in WA
Sidalcea hirtipes	hairy-stemmed checkermallow	-	endangered	One large population is known in Boistfort, one of 15 extant in Washington
Wyethia angustifolia	narrow-leaved mule's-ears	-	sensitive	One large patch in a grazed field, and a few individuals along the road. This is one of four known occurrences in Washington.
Trillium parviflorum	small-flowered trillium	-	sensitive	One occurrence was observed under forest canopy in Boistfort. It is one of numerous records in Washington.
Carex densa	dense sedge	-	threatened	Two occurrences of this species are known from the Boistfort area, out of nine known in Washington.
Cimicifuga elata	tall bugbane	species of concern	sensitive	One occurrence was observed under forest canopy in Boistfort. It is one of numerous records in Washington.

Rare Plant Species of Boistfort Prairie

Kincaid's lupine
(*Lupinus sulphureus* ssp. *kincaidii*)

Kincaid's lupine was named after Trevor Kincaid, professor of zoology at the University of Washington between 1901 and 1942. Both his daughter and grandson attended the Lupine Field Day on June 14, 2008, described below.

Kincaid's lupine, listed in 2000 as threatened by the U.S. Fish and Wildlife Service (USFWS 2000)(65 FR 3889), occurs only in isolated prairie remnants in the Puget Trough and the Willamette Valley, including two areas in Washington State. The northernmost population of the species is in the Boistfort Prairie.

The draft recovery plan for Kincaid's lupine establishes recovery criteria that specify viable populations in each of six recovery zones within the historical range of the species (USFWS 2005). The northernmost of these recovery zones comprises the southern extent of the Puget Trough ecoregion in Washington. The Boistfort Valley occurrence, on two sites within one-half mile of each other, including the cemetery property, is the largest known population in the state, by far, and offers the highest potential for protecting a population that meets the recovery criteria.

Figure 3. Kincaid's lupine.

When Cathy Maxwell made the initial discovery of Kincaid's lupine in Boistfort on May 31, 1986, she noted 40 – 50 plants in a fifty foot area. Subsequent searches by WNHP staff have added several more observations of this species in the valley.

Table 2. Summary of Washington populations of Kincaid's lupine

location	Square meters lupine cover	Stem or plant count (if available)
Toledo-north	286	250-300 (estimate)
Toledo-east	60	115 (actual count)
Toledo-south	100 – 150 (calculated from number of plants)	333 (actual count)
Drew's Prairie	1	1 plant
Boistfort - north	4,000	-
Boistfort - south	150	-

Lupine Field days

One especially enjoyable and inspiring event has resulted from the discovery of Kincaid's lupine in the Boistfort Valley. John and Mary Mallonee, the owners of an organic dairy farm where a large population of Kincaid's lupine grows, are very enthusiastic about conserving the species. They initiated a "Lupine Field Day", invited the public for a tour of their farm to see the Kincaid's lupine and other prairie plants, and hosted a gathering at the local grange hall for lunch and presentations by the WNHP and the USFWS. Their land management of carefully controlled grazing by replacement heifers appears to present ideal conditions for the lupine, which is thriving under their care.

Figure 4. Lupine Field Day at the Mallonee Farm on June 11, 2007.

Nelson's checkermallow
(*Sidalcea nelsoniana*)

Nelson's checker-mallow (*Sidalcea nelsoniana*), listed as threatened by the USFWS in 1993 (58 FR 8242), has been documented adjacent to the Boistfort Valley in a prairie remnant a few miles west.

Cathy Maxwell made the Boistfort observation of this species on June 25, 1994, noting around 60 flowering plants scattered for 40 yards along the roadside ditch, and including only 6-8 plants inside the fence and three on the north side of the road inside the fence.

By 2006 no plants were visible on the north side of the road and only a few plants were noted outside of the fence on the south side. However, the plants extended at that time for 230 meters away from the road along a drainage ditch between a cultivated field and the brushy slope where an old sawmill stands. The count made in 2006 was 88 clumps with a total of 1,289 flowering stems.

Figure 5. Nelson's checkermallow

Recovery criteria for Nelson's checker-mallow specify minimum viable populations in each of eight recovery zones within the historical range of the species (USFWS 2005). The northernmost of these recovery zones is the same portion of southwest Washington specified as the recovery zone for Kincaid's lupine. The extant population of Nelson's checker-mallow in Washington totals approximately 300 plants, in two occurrences (WNHP 2006). This population is far below the recovery plan criterion. The prairie remnant in the Boistfort Valley could provide an appropriate location for increasing the abundance of this species in close proximity to one of two known occurrences in Washington.

Pale larkspur

(*Delphinium leucophaeum*)

Cathy Maxwell made the first observation of pale larkspur on June 14, 1986, noting around 800 plants in several locations for about one mile along the Boistfort road. Although one additional patch has subsequently been discovered away from the road, all of the roadside patches appear to have either disappeared entirely or markedly declined since 1986 (see Table 3).

Pale larkspur is designated by the USFWS as a species of concern and by the WNHP as endangered (WNHP 2008). The Boistfort Valley population of this species is the only known occurrence in Washington.

Table 3. Population counts for pale larkspur, 1986-2008

Groups	number of plants (stems)										
	1986	**1991**	**1992**	**1993**	**1994**	**2002**	**2003**	**2004**	**2005**	**2007**	**2008**
Group 1	275	64	116	697	111	-	2	7	-	-	-
Group 2	100	210	53	187	32	-	16	26	-	-	-
Group 3	250 (est)	213	91	184	62	-	60	47	-	-	-
Group 4	-	50	0	7	0	-	0	0	-	0	-
Group 5	-	101	22	164	21	-	26 (30)	26	-	9	4
Group 6	250-300	23	10	36	12	-	5	9	-	0	-
Group 7	50-60	136	15	5	3	-	28	60	-	50	35 (est)
Group 8	-	0	0	11	10	-	-	-	-	-	-
Group 9	-	-	-	-	-	-	-	-	-	-	12
Total	**925-985**	**797**	**307**	**1291**	**251**	**98**	**137**	**175**	**67**	**59**	**39**
1986, 1991-1994: Cathy Maxwell											
2002: Florence Caplow (WNHP) and Cathy Maxwell											
2003 and 2004: Keith Karoly 10June2003 and 8June2004, 2005											
2007 and 2008: Joe Arnett, 8June2007 and 11June2008											

Keith Karoly, who specializes in research with delphiniums at Reed College, visited the site in 2003, 2004 and 2005. He collected seed on July 18, 2003 and sent seed from group 3 (from 3 plants), group 5 (from 12 plants) and group 7 (from 11 plants) to Berry Botanic Garden.

Figure 6. Pale larkspur

Thin-leaved peavine

(*Lathyrus holochlorus*)

Thin-leaved peavine is designated by the USFWS as a species of concern and by the WNHP as endangered (WNHP 2008). The Boistfort Valley population of this species, currently known from two patches, is the only known occurrence in Washington.

One clump has been known since 1991. It was recorded in 1994 as occurring in three patches, 10 x 7, 2.7 x 3.7, and 7.3 x 9.3 meters. In 2007 this patch was visited several times, and while many sprouting stems were present on that east side of the knoll, no flowering was observed. We speculate that grazing horses or cattle found peavine especially attractive and browsed the plants before they could flower. In 2008 no grazing was observed at this site, flowering and fruit set was abundant, and this clump was measured at 23 by 17 meters.

A new patch of this species was found in 2008. This pasture it occurred in had previously been examined several times by WNHP botanists, without detecting the peavine. In the winter of 2007, flooding had damaged fences, and cattle had not yet been released in that field. It is possible that these plants were seen in 2008 because the cattle had not yet browsed the plants. In the years since 1991 a few small patches of thin-leaved peavine have been observed along the roads in the valley, but none of these were seen in 2006, 2007, or 2008.

Figure 7. Thin-leaved peavine

Hairy-stemmed checkermallow
(*Sidalcea hirtipes*)

A single occurrence of hairy-stemmed checkermallow, endangered in Washington, is known in the Boistfort area, in the Keller Creek drainage. In 2007 this population was revisited, and it appears to be thriving and expanding. Many plants not recorded previously were seen in an area that had been logged several years previously, ripped with heavy equipment to loosen the soil, and then replanted with conifers. Hairy-stemmed checkermallow was abundant through this area, and was also observed in several places in an adjacent clearcut. The species appears to have responded in these cases to the disturbance of logging, which is widespread in this area. More extensive surveys in this area might reveal additional populations.

Figure 8. Hairy-stemmed checkermallow

Narrow-leaved mule's-ears
(*Wyethia angustifolia*)

Narrow-leaved mule's-ear, sensitive in Washington, is found in one large patch in a grazed field. In addition, a few individuals are growing along the road in an area that is frequently mowed. The plants in Boistfort make up one of four known occurrences in Washington.

Figure 9. Narrow-leaved mule's-ears

Small-flowered trillium
(*Trillium parviflorum*)

Small-flowered checkermallow is sensitive in Washington. A single patch is known from the Boistfort valley, found during a Washington Native Plant Society field trip in June, 2008. It is found under a mixed broad-leaved and coniferous forest canopy. Numerous populations of this species are known in Washington.

Dense sedge

(*Carex densa*)

Dense sedge is threatened in Washington. An extensive population of this species – thousands of plants - was observed in the Keller Creek drainage in 2005. A second occurrence in the area was found in a wet part of a grazed field in Boistfort Prairie in 2006. It is surprising to find this species, typically in Willamette Valley wet prairies, up in the hills. Nine occurrences, including these two, are known from Washington. The Keller Creek population is by far the largest known in Washington.

Tall bugbane

(*Cimicifuga elata*)

Tall bugbane is sensitive in Washington. Two areas containing this species have been found on forest land in the Boistfort Valley, one in 1986 by Cathy Maxwell and one in 1994 by Susan Saxton. Numerous occurrences of this species are known from diverse areas of Washington.

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