Proposal to U.S. Forest Service to Establish West Fork Bimerick Creek and Bimerick Meadows as a Research Natural Area

Fred Rabe and Juanita Lichthardt

Natural Areas Data Form

Site name	West Fork Bimerick Creek and Bimerick Meadows
General location	20 miles northwest of Lowell, ID
Directions	See report
County	Idaho
USGS Quad	McLendon
Township-range-section	See report
Size	26 hectares (10.4 acres)
Elevation	1280 m
Boundary rationale	Meadow itself demarcates most of boundary with trail to falls and East Fork Bimerick Creek forming its south border - See photo of map.
Designer	Fred Rabe
Map date	1994
Ownership/Management	Clearwater National Forest
Site description	See report
Elements	See Figs
Protection urgency	Unknown
Information sources	Rabe, F. W., Lichthardt, J. and M. K. Nielson 2002. *Established and proposed Research Natural Area streams in the Clearwater National Forest,* ID Department of Fish and Game and Clearwater National Forest, 105 p. Rabe, F. W. and N. Savage 1977. *Aquatic natural areas in Idaho,* ID Water Resources Research Institute, Project A-O46-IDA,109 p.

Land use comments	Grazing of meadow occurred 50 years ago.
Working group(s) to receive copy	Forest Service, Idaho Fish and Game Department, Idaho Conservation League, Idaho Native Plant Society
Identified by	Charles Wellner
Best contact	Fred Rabe
Data sensitive	No

PART 2

Key environmental factors	None exerts major influence
Exotics	None potentially damaging
Designation	Nothing
Protecting comments	None known
Conservation intent	No known conservation intentions
Public access	Open to general public
Mineral rights	Unknown
Off-site land uses	Road conditions probably limits access

PART 3

Natural hazards	None known in area
Climate description	Unknown
Management needs	Tree barrier surrounds most of meadow. No fence required
Pests/pathogens	None known

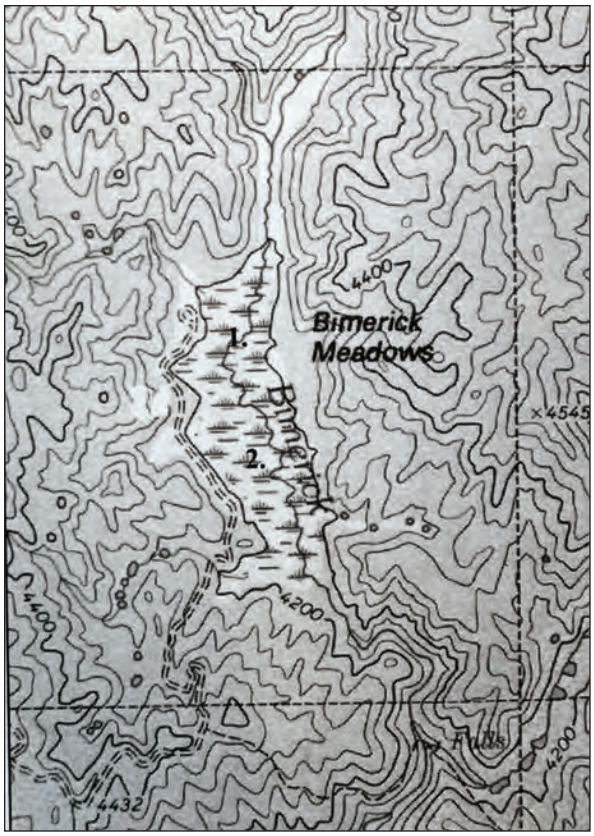
Natural Area history	Sheep grazing 50 years ago. Site studied in 1976 and 2002.
Managed area comments	None known about
Status summary	None
Target comments	A narrow stream winds through a large benchland meadow about 1/2 mile wide and 3/4 mile long. Diverse, tall graminoid vegetation forms the core of the meadow. Streamside vegetation which provides a canopy over half the channel width consists of a tall forb-water sedge community. Future studies might compare this meadow having tall graminoid vegetation with Forty-nine Meadows RNA, headwaters to the Little North Fork Clearwater River. The dominant plant cover here is sedges and sphagnum.
Discussion summary	See *Some ecological differences between Bimerick Meadows and Fortynine Meadows* - p 11 report.
Species list	Vascular plant and macroinvertebrate lists in report.

Bimerick Meadows

Both the East Fork and West Fork of Bimerick Meadows were studied August,1976 by Fred Rabe and Nancy Savage. Juanita Lichthardt and Fred Rabe sampled the West Fork in 2001 and published their findings in 2002. Most of the pictures here were taken in 2001. Brett Haverstick and Fred Rabe flew over the area in May, 2015 and made observations on the ground September of that year.

General Description

The West Fork Bimerick Creek sampling site is a second order stream that flows through Bimerick Meadows where it meanders widely through a broad bottomland at 1280 m. The wet meadow is over 0.8 km wide and extends more than 20 hectares. The upper site occurs about 1.3 km below the confluence of two first order streams. The length of the catchment basin is 8 km and the drainage pattern is pinnate. Downstream from the sampling sites, the East Fork of Bimerick Creek flows into the West Fork. A series of closely spaced beaver ponds once occurred there but few now exist. A 28 m falls on the East Fork flows about 4 miles to the Lochsa River.



Tributary stream entering upper meadow.

Meandering first order stream in upper West Fork Bimerick Creek

View north from south end of meadow. Diverse, tall graminoid vegetation forms the core of the meadow.

Station 1. West Fork Bimerick Creek July 2001 Location: Head of Bimerick meadow. N46 degrees 16.56'W115 degrees 26.61' Elevation: 1318 m. Channel type: E4. Dominant habitat: glide/pool, Average width: 5 m Av depth: 50 cm.Canopy cover: 20 percent. Dominant substrate is gravel. Note dark mats of the moss, *Fontinalis antipyretica*, and logs in channel that create pool habitat. Dominant tree species is Englemann spruce (*Picea engelmanii*).

Looking north from Station 1. Note extent of canopy cover and the moss covering bottom substrate comprised mostly of gravel.

Station 2 West Fork Bimerick Creek July 2001 Location: Site is near middle of Bimerick Meadows. N46 degrees 16418', W115 degrees 26.67'.Elevation: 1293 m. Channel type: E4. Dominant habitat: glide/pool. Av width: 4 m. Av depth: 60 cm. Canopy cover: 29 percent. Width/depth ratio: Low. Debris dammed pool is to the left. Short riffle blends with glide downstream. Canopy cover averages less than 10 percent in the middle of channel and about 40 percent at edge of channel. Yellow flowers overhanging bank are hairy arnica (*Arnica mollis*).

Overhanging herbaceous growth mainly false hellebore (*Veratrum californicum var. caudatum*) provides high canopy cover near shore. Some pools here at Station 2 approached 1 m in depth.

West Fork Bimerick Creek leaving meadow September 2015.


Southern end of meadow looking north

Diverse, tall graminoid meadow vegetation forms the core of the meadow. Prominant species include California false hellibore (*Veratrum californicum*), hairy arnica (*Arnica mollis*) and cow parsnip (*Heracleum lanatum*). Large thickets of alder leaf buckthorn (*Alnus alnifolia*) is typical of montane wetlands. Subalpine spirea (*Spirea densiflora*) and Drummond's willow (*Salix drummondiana*) also occur but in minor amounts. Small fruited bullrush (*Scirpus microcarpus*), sedges, buckthorn and numerous forbs overhang the stream on undercut banks. Islands of conifers (Englemann spruce and subalpine fir) are scattered throughout the meadow. An aquatic moss identified at both stations is *Fontinalis antipyretica*).

At Station 1, two contrasting meadow types were identified ("short" and "tall"). The short meadow is only 0.3-0.6 m tall and dominated by forbs with patches of subalpine spirea. Water sedge (*Carex aquatilis*) and hairy arnica, dominant species in other portions of the meadow, are here restricted to the streambank and alderleaf buckthorn is absent. Areas of tall meadow on the opposite bank average 1 m and are dominated by cow parsnip, Canby's ligusticum (*Ligusticum canbyi*, subalpine spirea and bluejoint reedgrass (*Calamagrostis canadensis*) with a lower layer of mountain boykinia (*Boykinia major*) and false bugbane (*Trautvettaria caroliniensis*). The two meadow types share many species. A diverse assemblage of sedges, grasses and forbs including hairy arnica are primarily restricted to the bank of the deeply incised stream.

Streamside meadow vegetation at Station 2 was sampled with two plots (Table 1). These communities are typical of major portions of the meadow that adjoins the stream. It is a tall forb/ water sedge community type with large patches of alder leaf buckthorn, the dominant woody species.


Water sedge


False bugbane

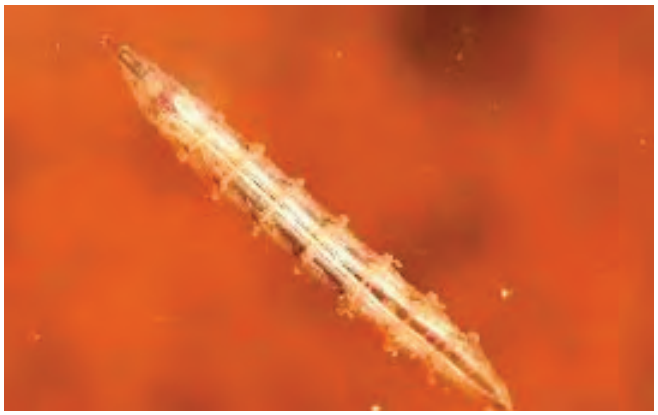

Cow parsnip


Arrowleaf buckthorn

Macroinvertebrates were collected from the gravel and moss at both stations. The moss samples had over 1.5 times as many taxa as samples with a gravel substrate. Brusven et al. (1990) found that macroinvertebrate densities were 4-18 times greater in moss clumps than in mineral substrates. In adddition, EPT species (mayflies, stoneflies, caddisflies) were much more numerous in the moss. These groups of invertebrates are recognized as being the most sensitive to environmental impact indicating the stream is in good shape. The dark blotches in the channel is the moss, *Fontinalis anipyretica.* When moss clumps aggregate into dense mats, as sometimes occurred in Bimerick Creek, there is serious impaction of the mineral substrate.

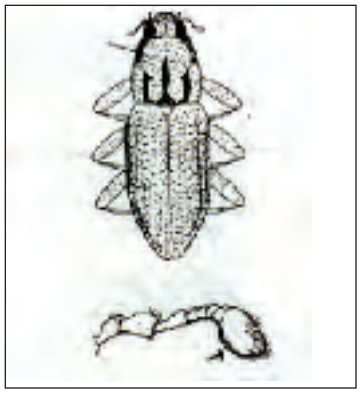
Baetis tricaudatus, dominant in every sample, is a collector-gatherer with a tolerance value of 4 (on a scale of 1-10, higher numbers indicate a higher tolerance in streams).

Lepidostoma

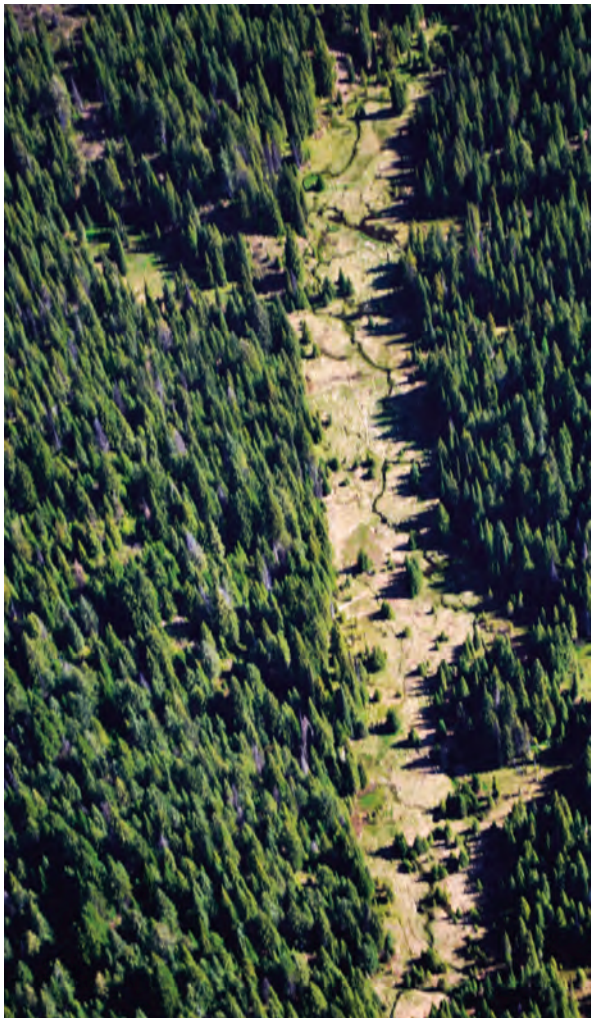


Lepidostoma is an uncommon species in the Clearwater drainage. It occurs in slow moving streams like Bimerick Creek. It has a tolerance value of 1. *Chrysops* is a fly larvae not often seen in the Clearwater watershed. It is predacous on other invertebrates and has a tolerance value of 6.

Glide/pool habitat in the West Fork consists of pea gravel, coarse particulate organic matter, large woody debris and submerged clumps and mats of moss which provide cover, shade and habitat for macroinvertebrates and cold water vertebrates.

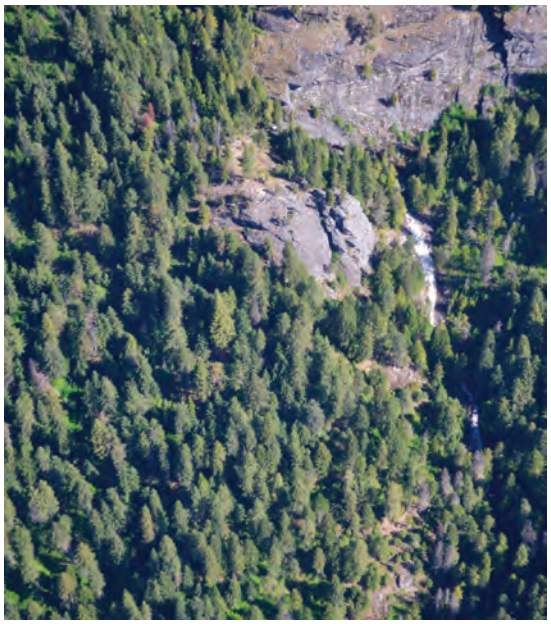


Zaitzevia is a small elmid beetle uncommon in the Clearwater. The last segment of the antennae is enlarged and the legs tend to stick up away from the body.It is primarily a collector-gatherer with a tolerance value of 5.



Above and below: East Fork Bimerick Creek. May, 2015. Drouth conditions occurred for several months before this date causing the demise of meadow and streamside vegetation especially tall forbs such as false helibore and cow parsnip. Beaver ponds were few in number compared to those observed in 1976.

Contiguous seep beaver ponds filling the valley of the East Fork Bimerick Creek. August, 1976.



A 28 m waterfall exists on the East Fork of Bimerick Creek. It tumbles down a steep gorge for about 4 miles until it enters the Lochsa River. May, 2015.

Table 1. Composition of plant communities associated with sampled reaches of Bimerick Creek. Values are canopy cover classes*.

	Station 1	Station 2		
	Short Mdw.	Tall Mdw.	Plot 1	Plot 2
TREES				
Picea engelmannii (seedling)		+		
SHRUBS				
Alnus sinuata	+			
Cornus sericea	+			
Lonicera involucrata		+		
Rhamnus alnifolia			60	
Ribes hudsonianum		+		
Salix drummondiana	+	+		
Spiraea densiflora	+	+		1
GRAMINOIDS				
Bromus ciliatus	+		5	
Calamagrostis canadensis	+	+	1	10
Carex aquatilis		50	5	
Carex neurophora		+		
Carex utriculata	+		20	
Carex laeviculmis				1
Cinna latifolia		1		
Glyceria grandis	+			
Poa pratensis			90	
Poa sp.	1			
Scirpus microcarpus	+	+	1	
FORBS AND FERNS				
Anaphalis margaritacea	+			
Arenaria macrophylla			1	
Arnica mollis		1	1	
Aster occidentalis		1	1	
Athyrium filix-femina	+		1	
Boykinia major	+	+	10	20
Epilobium watsonii	+			
Equisetum arvense	+			
Galium sp.		1	5	
Geum macrophyllum	+			o.p.
Habenaria saccata			1	
Heracleum lanatum	+	+		20
Hypericum anagalloides				
Ligusticum canbyi	+	+	5	5
Mimulus moschatus		+	1	
Montia sp.		5	1	
Ranunculus acris			1	
Rudbeckia occidentalis	+			
Rumex acetosella	+			
Sanguisorba sitchensis	+			
Senecio triangularis	+		5	5
Solidago canadensis	+		5	10
Taraxacum officinalis				1
Trautvetteria caroliniensis	+	+	1	1
Veratrum californicum			40	30

*.1 = < 0.1%; 1 = 0.1-1%; 5 = 1-5%; 10 = 5-15%; 20 = 15-25% etc.; + = present (no data); o.p. = outside plot.

Table 2. List of macroinvertebrates collected in Bimerick Meadow Creek

Taxa	Sta 1 mineral	Sta 1 moss	Sta 2 moss
EPHEMEROPTERA			
Baetis tricaudatus	X	X	X
Paraleptophlebia sp.		X	X
Seratella sp.	X	X	X
Cinygmula sp.	X		
Ameletus sp.	X	X	X
Drunella spinifera		X	X
Clasenia sp.		X	
PLECOPTERA			
Hesperoperla pacifica		X	
Sweltsa sp.	X		X
Cultus sp.		X	X
TRICHOPTERA			
Lepidostoma sp.		X	X
Rhyacophila sp.		X	X
Micrasema sp.		X	X
Glossosoma sp.		X	
COLEOPTERA			
C Barr imm.	X	X	
Optioservus sp.	X	X	X
Zaitzevia sp.	X		
Cleptelmis sp.		X	X
DIPTERA			
Dicranota sp.			X
Simulium sp.	X		X
Tabanidae		X	
Chironomidae	NONE	LOST	
Corynoneura sp.			X
Brillia sp.			X
Eukiefferiella devonica			X
Tvetenia bavarica			X
Microsectra sp.			X
Pagastia sp.			X
OLIGOCHAETA			X

By establishing West Fork Bimerick Creek and surrounding meadow in the Lochsa River drainage as an RNA, we provide an interesting ecological comparison between it and Fortynine Meadows RNA in the Idaho Panhandle NF. Such differences in the composition of plant and invertebrate communities interacting with their physical environment enable us to better appreciate the benefits of hands-on learning.

Some ecological differences between Bimerick Meadows and Fortynine Meadows

	Bimerick Meadows	Fortynine Meadows
Size and elevation	234 acres 4,200 ft	391 acres 4,920 ft
Stream characteristics	Mostly glide flow, E4 habitat Silt bottom Riparian - sedge and grass Bull trout present	Mostly glide-pool, E4 habitat Pea gravel Riparian - Tall forb sedge comm. Brook trout present
Macroinvertebrates	21 species in aquatic moss 5 from mineral bottom substrate Dominant species - *Baetis tricau datus* Tolerance level 5 EPT species 14	All 27 species in aquatic moss 7 from grass and 7 in open water Dominant species - *Baetis tricau datus* Tolerance level 5 Another dominant sp was *Ephemerella* Tolerance level 1 EPT species 19
Plant communities	Tree sp - 1, Shrub sp - 7 Graminoid sp - 11 Forb and fern sp - 25	Tree sp - 8, Shrub sp 6, Graminoid sp 2 (incomplete) Forb and fern sp - 15
Dominant meadow vasclar plants	False hellebore, Hairy arnica, cow parsnip, Alder leaf buckthorn	Firethread sedge, Cottongrass

Two first order streams merge to form West Fk Bimerick Ck and continue as a stringer meadow about 1/2 mile wide and 3/4 mile long. Diverse graminoid vegetation comprises core of meadow. Streamside vegetation which forms a canopy over half the channel consits of a tall forb sedge community. Invertebrate taxa increase where mats of moss provide suitable habitat.

Fortynine Meadows subalpine peatland is a poorly drained area whose substrate is periodically saturated or covered with water having a peat layer about 12 in or more in thickness. Meadow Creek, a first order stream, runs through the peatland. Its origin is springs where ground water aquifers discharge to the surface. The cold water shows little temperature variation during the summer. Some rare plants have been discovered in the meadow by Forest Service botanists.