ATTACHMENT SS2

REGION 2 SENSITIVE SPECIES EVALUATION FORM

Species: *Botrychium campestre / Prairie Moonwort*

Criteria	Rank	Rationale	Literature Citations
1 Distribution within R2	A	USFS Region 2 is part of the southern edge of the known distribution of Prairie moonwort, though it is reported from 4 of the 5 states. It is sparse throughout its range. *Botrychium campestre* is reported, but unranked in South Dakota, where it could occur on USFS national grasslands or Black Hills National Forest. In Wyoming, this species is known from a single population on Black Hills National Forest in Crook County. This population had not been relocated for 27 years. USFS personnel sought it in 2001, and sent specimens to Dr. Donald Farrar. He has confirmed that they represent a new taxon, *B. michiganense.* He also re-examined the original specimen collected by Dr. Robert Dorn to verify that it is *Botrychium campestre*. Rangewide, this species is reported from sandy grasslands and limestone prairies. In Wyoming, it is known only from the vicinity of a campground in a semi-shady mixed deciduous and Ponderosa pine forest on sandy soils. Confidence in Rank High	• Dorn 2001 • Fertig 1993, 2000a, b • Fertig et al. 1994 • Great Plains Flora Association 1986 • Marriot 1994 • Marriott et al. 1990 • NatureServe 2002 • Spackman et al. 1997
2 Distribution outside R2	BC	It occurs from central Alberta to Quebec, and south to Oregon, Colorado, Iowa, Wisconsin, and New York. In Wyoming, it is known only from the northwestern Black Hills in Crook County in Region 2. Confidence in Rank High	• FNA 1993 • Great Plains Flora Association 1986 • Lellinger 1985 • NatureServe 2002 • Wagner and Wagner 1993
3 Dispersal Capability	BC	*Botrychium* spp. reproduce by wind-borne spores. Prairie moonwort occurs in fairly specialized habitats (at least in Wyoming) and may disperse poorly across habitat barriers. Confidence in Rank High	• -

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4 Abundance in R2	A	Prairie moonwort was originally reported at the one Wyoming population as "very rare." It can be extremely difficult to locate due to its small stature and ephemeral growth habit (the single leaf withers by early summer and the plant persists below ground the rest of the year). Additional data are needed on the abundance of this species in Colorado and Nebraska (where it is ranked S1 by the state heritage programs), and from South Dakota where it is present but not ranked. Confidence in Rank High	• Fertig 2000a • WYNDD 2002
5 Population Trend in R2	D	Not known. Populations may be ephemeral or habitat conditions successional. In Wyoming, this species could not be relocated from 1973-2001, and had been thought to be possibly extirpated (Fertig 2000 a). Trends are difficult to assess due to the ephemeral habit of the plant and its dwarf stature. Changes in its habitat since 1973 may have also made the single known Wyoming site unsuitable. Confidence in Rank High	• Fertig 2000a
6 Habitat Trend in R2	AB	Undisturbed areas of sandy or limey prairie habitat have declined sharply in the past 150 years in the lower elevation areas of USFS Region 2. Short-term habitat trends are less well known. The Wyoming population may also be vulnerable to effects of on-going ecological succession, as its once open habitat is becoming increasingly forested with Ponderosa pine (Fertig 2000 a). Confidence in Rank High	• Fertig 20001
7 Habitat Vulnerability or Modification	B	Elsewhere in its range, the habitat may be vulnerable to plowing, grazing, recreation use, and second home construction. In Wyoming, it is known only from Black Hills National Forest under multiple-use management. Confidence in Rank High	• Fertig 2000a

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8 Life History and Demographics	D	Prairie Moonwort is an herbaceous perennial that produces one vegetative leaf blade (frond) and one fertile frond joined to it. The sporangia produce spores that germinate to produce the gametophyte, a haploid life cycle stage. It is one of four moonwort species that also commonly produce dense clusters of minute gemmae at the root bases, vegetative outgrowths. Members of the Ophioglossales are generally mycorrhizal, and many have been shown to exhibit season-long dormancy in which above-ground plant material is not produced each year. Members of the Botrychium subgenus Botrychium have often been shown to occur in "genus communities" of different species, further complicating demographic analysis. Many moonwort species are considered rare because of their limited distribution and habitat specificity, although in some cases this rarity may be an artifact of the difficulty inherent in locating and identifying these low-growing plants. Life history studies have been conducted for Prairie moonwort in Iowa (Nekola & Schlicht 1996), but comparable studies are needed on USFS R2 lands to better assess its conservation status. Confidence in Rank High	• Hitchcock et al. 1969 • Nekola and Schlicht (1996) • Wagner and Wagner 1983 • Wagner and Wagner 1993

Initial Evaluator(s): Bonnie Heidel and Scott Laursen	Date: 18 February 2002

National Forests in the Rocky Mountain Region where species is KNOWN (K) or LIKELY(L)[1] to occur:

[1] Likely is defined as more likely to occur than not occur on the National Forest or Grassland. This generally can be thought of as having a 50% chance or greater of appearing on NFS lands.

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Colorado NF/NG	**Known**	**Likely**	**Kansas NF/NG**	**Known**	**Likely**	**Nebraska NF/NG**	**Known**	**Likely**	**South Dakota NF/NG**	**Known**	**Likely**	**Wyoming NF/NG**	**Known**	**Likely**
Arapaho-Roosevelt NF			Cimmaron NG			Samuel R.McKelvie NF			Black Hills NF			Shoshone NF		
White River NF						Halsey NF			Buffalo Gap NG			Bighorn NF		
Routt NF						Nebraska NF			Ft. Pierre NG			Black Hills NF	X	
Grand Mesa, Uncompahgre, Gunnison NF						Ogalala NG						Medicine Bow NF		
San Juan NF												Thunder Basin NG		
Rio Grande NF														
Pike-San Isabel NF														
Comanche NG														

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