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CONSERVATION ISSUES

Wildlife Conservation and Wilderness: Wishful Thinking?

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ABSTRACT: Wilderness management objectives and wildlife conservation objectives often conflict with each other, despite conservation being one of six basic reasons for which wilderness is established. Most wilderness areas appear to have been established as the result of political or societal desires, but in the absence of critical ecological thought. In an era of increasing anthropogenic impacts to wildlife populations and to wildlife habitat outside of wilderness, those ostensibly "pristine" areas in and of themselves will become less and less effective as conservation tools, particularly for large, vagile mammals. Impacts occurring outside of wilderness areas have ramifications for wide-ranging animals that use those areas during portions of their annual cycles, thereby affecting wilderness character. Similarly, impacts occurring inside of designated wilderness also have ramifications for large, vagile mammals that also utilize proximate lands. There is a need to re-ignite the debate over the value of wilderness, both in the context of its societal role, as well as that of a conservation strategy. It is essential that wildlife conservation be elevated to the same level of importance that is accorded solitude and other subjective attributes of wilderness.

Index terms: connectivity, conservation, management, social issues, wilderness, wildlife

INTRODUCTION

Many individuals recently celebrated the golden anniversary of the 1964 Wilderness Act (Act). Some have opined that the 50-year-old Act has been nothing but positive for wildlife conservation and that it, "may be even more important today" (Kurth 2014) than it was at the time it became law. It is becoming more and more evident, however, that *wild lands*, and not necessarily legislated wilderness, are important and necessary for conserving wildlife and, in particular, large mammals that often range over vast areas. Although the Act has protected thousands of square kilometers of wildlife habitat from exploitation (Kurth 2014), in the absence of extensive suitable habitat adjacent to legislatively protected areas, many populations of large mammals are unlikely to persist within legislated wilderness alone (Salwasser et al. 1987; Krausman et al. 1992; Bleich 2005). Wildlife conservation activities proposed to occur inside of designated wilderness areas are, unfortunately, among the most controversial of issues (Czech and Krausman 1999; Krausman and Czech 2000; Mattson and Chambers 2009). For example, wilderness has precluded the use of prescribed fire to maintain habitat for large mammals in the San Gabriel Mountains of California, despite the reliance of bighorn sheep (*Ovis canadensis* Shaw) and mule deer (*Odocoileus hemionus* Rafinesque) on early successional stages of coastal chaparral in that mountain range. Coastal chaparral is a fire-dependent shrub community and fire dynamics therein have enormous implications for bighorn sheep and mule deer (Holl and Bleich 2010; Holl et al. 2012). Bighorn sheep are classified as a sensitive species by the US Forest Service (USFS 2013), and decisions regarding habitat enhancement for large mammals also affect habitat for dozens of other species dependent on similar ecological conditions (Loft and Bleich 2014). Moreover, failure to re-establish a natural fire regime in the San Gabriel Mountains has had cascading effects on prey of mountain lions (*Puma concolor* L.), the apex predator in that system (Holl et al. 2004, 2012; Holl and Bleich 2010).

In other examples, wilderness designation has confounded or prevented efforts to restore bighorn sheep to historical ranges or to enhance survival or connectivity of populations through the development of reliable sources of surface water (Bleich 2005, 2009). This has occurred despite strong evidence that reliable surface water is an important factor explaining the persistence of populations of bighorn sheep (Epps et al. 2004). This factor could become even more important pending climate change and could profoundly affect the distribution and population structuring of that species (Epps et al. 2006). Further, provision of reliable surface water has the potential to mitigate the onerous effects that freeways (Epps et al. 2005), or other anthropogenic barriers, have had on gene flow among formerly connected subpopulations of bighorn sheep (Bleich 2009).

Wilderness provides some habitat protection, but the presence of livestock and feral equids in many such areas affects large

mammals through forage competition, habitat alteration, or disease vectors. Despite good intentions, wilderness—or any otherwise protected areas—does not alone guarantee viable wildlife populations in the long term (Soule et al. 1979; Krausman et al. 1992; Burkey 1994). In the absence of certain resources, including seasonal ranges and birthing areas, and access to them—as well as migration or movement corridors—large mammals cannot depend exclusively on wilderness areas to meet their life history needs (Bleich 2005; Owen-Smith 2013). Further, generalizing about the benefits of wilderness to wildlife is hazardous, because benefits to one species can simultaneously be detrimental to another (Schoenfeld and Hendee 1978).

Wilderness designation does not ensure the persistence of many wildlife species or wild components of our land. Indeed, while acknowledging the value of "wilderness," Spurr (1966) characterized it as a sociological, rather than an ecological, phenomenon. Many wilderness areas have been delineated by special interest groups and then approved by Congress for primarily political reasons, analogous to the process described by Williams (2014). Further, Haufler et al. (1996) noted that, "designation of wilderness is an opportunistic political process."

Many proponents of wilderness have argued that wilderness areas are essential to maintaining wildlife populations. While that might be true for some species in some places, it is not widely applicable to the role of wilderness in the conservation of most large, vagile mammals. Indeed, "the home ranges of such animals … encompass lands that are under widely different management goals, ranging from full protection to intensive agriculture and minerals extraction" (Salwasser et al. (1987). Any argument that wilderness designation is the solution to the persistence of many species is wishful, but misleading.

Cronon (1995) argued that, "a hands-off approach to wilderness poses a serious threat to responsible environmentalism." Further, Leopold (1949) questioned the value of wild areas absent some of their indigenous fauna, with an emphasis on large terrestrial mammals. Unfortunately, it appears that many (if not most) wilderness areas were established in the absence of ecological forethought (Bleich 2005), without regard to (1) juxtaposition and connectedness; (2) increased use resulting from their "protected" status (Wallace 1992; Klein 1994); (3) increased impacts outside of those protected areas as opportunities for use by the public are constrained within wilderness; and (4) the synergistic impact of all of the above on movements of large mammals between "islands" of fully protected habitat (Schwartz et al. 1986; Bleich et al. 1990, 1996) or critically important seasonal ranges.

As an example, the California Desert Protection Act (CDPA; US Congress 1994) designated as wilderness much habitat traditionally viewed as essential for bighorn sheep (i.e., steep, rocky slopes in insular mountain ranges) in the Mojave and Sonoran Deserts. However, the CDPA also contributed to additional fragmentation of bighorn sheep habitat through the proliferation of pipelines, roads, recreational activities, and solar energy projects proximate to those islands of wilderness (Leitner 2009; Lovich and Ennen 2011). Had ecological or evolutionary processes been considered, the outcome could have been much different. Of paramount importance would have been concern for linkages among areas occupied by bighorn sheep. Instead, biologists and other conservationists are now fighting battles that should have been resolved prior to creation of those wilderness areas.

Defenders of wilderness have emphasized "naturalness" or "solitude" (e.g., Briggs et al. 2011) and even "spirituality" (Ashley 2012 [and references therein]; Tin 2012) as primary attributes of such areas, despite conservation being one of the six management objectives of wilderness (US Congress 1964). Proponents also contend that "wilderness is good for wildlife" because it prevents habitat destruction, but conservation of wilderness and conservation of wildlife are not necessarily compatible objectives (Bleich 1999). Leopold (1949) noted that "wilderness areas are, *first of all* [emphasis added], a means of perpetuating … the more virile and primitive skills, in pioneering and subsistence." Clearly, that statement carries a strong endorsement of the recreational value of wilderness. Leopold (1949) also noted the importance of wilderness as a "laboratory for the study of land health," but realized that many protected areas (in this case, national parks ranging up to a million acres in size) were not large enough to retain their natural predators, or to preclude diseases contracted from domestic livestock. Ironically, long before the publication of some contemporary ecological principles (e.g., island biogeography, metapopulation dynamics), Clarke (1913) opined that, "An ideal system [for game or wildlife refuges] would be to create such reservations all over the State [of California], in close enough proximity that game could pass from one reservation to another. Such a commingling of individuals is apt to be of the greatest necessity in the future, to prevent the natural outcome of inbreeding, which might result among isolated groups of animals." Later, Leopold (1949) cautioned that, "many animal species … do not seem to thrive as detached islands of population." Those forward-thinking individuals recognized the need to avoid isolating protected areas from one another long before passage of the Wilderness Act in 1964 and, in particular, the California Desert Protection Act of 1994; had some basic ecological principles been included in either piece of legislation, concerns voiced herein might have been avoided. Although bighorn sheep occur in naturally fragmented populations (Bleich et al. 1990), their persistence at a landscape-level is contingent upon opportunities for demographic or genetic rescue, consistent with metapopulation theory (Schwartz et al. 1986; Bleich et al. 1990, 1996; Epps et al. 2007).

My intent is not to demean wilderness; rather, this is a plea for recognition that in many cases management intervention in legislated wilderness, whether from the standpoint of habitat management or population management, is in the best interest of wildlife conservation, and my hope is that Congress will, eventually, clearly emphasize that point. Spurr (1966) articulated the need for more science in general, and more ecology in particular, in the [wilderness] management and decision

process, and Frome (1984) criticized the absence of an ecosystem-level approach. I add that, as one of the foundations of wilderness, conservation warrants more than lip service, and intervention is sometimes necessary to restore or maintain ecosystem function, even in wilderness (Holl et al. 2012). Moreover, opportunities to mitigate for impacts occurring outside of wilderness, but affecting wildlife populations that occupy wilderness on a seasonal or temporary basis, are sometimes best implemented within wilderness or other protected areas—such as national parks—because those areas potentially can provide the greatest return to conservation objectives (Bleich 2012a, b).

The literature is replete with papers, books, and legal documents addressing wilderness in sociological or ecological contexts, but it is impossible to consider them all here. Nevertheless, some authors (e.g., Schoenfeld and Hendee 1978; Kelson and Lilieholm 1999) have emphasized that what occurs outside of wilderness has potentially profound influences on what goes on within wilderness, and even suggested that buffers be established to lessen outside influences on wilderness. Those authors failed to acknowledge, however, that activities that are either precluded inside wilderness—or that are specifically allowed within such areas, such as the grazing of livestock and the presence of feral equids—can profoundly influence those species of wildlife whose distributions overlap wilderness and nonwilderness areas.

As an example, livestock grazed on the Lazy Daisy Allotment in the Old Woman Mountains, San Bernardino County, California, potentially compete with bighorn sheep for water and serve as sources of viral diseases to which bighorn sheep are exposed (Wehausen 1988). A decision was made (BLM 1980) to convert that allotment from perennial to ephemeral, and to preclude cattle grazing in bighorn sheep habitat in an effort to enhance bighorn sheep in that range. Within a year of that decision, the allotment was reclassified as perennial/ephemeral. As a result, grazing of livestock in bighorn sheep habitat continues, and the allotment persists and has been authorized repeatedly (BLM 1999, 2006a, 2007). Ironically, Senator Feinstein's California Desert Protection Act (US Congress 1994) created three wilderness areas occupied by bighorn sheep with which the Lazy Daisy Allotment overlapped (Table 1). The allotment has since been reduced in size (BLM 2006a, BLM 2006b); nevertheless, pending legislation (Feinstein 2015) stipulates that the Lazy Daisy Allotment will remain active despite partial inclusion in the proposed Mojave Trails National Monument as well as its overlap with those wilderness areas (Table 1)—potentially to the detriment of wildlife conservation efforts. For example, that portion of the allotment that includes the Piute Mountains (erroneously referred to as the Piute Range by Weaver and Hall 1971) has been identified as an area in which a permanent population of bighorn sheep could be established pending appropriate management actions.

It is essential that wildlife conservation be elevated to the same level of importance accorded to solitude and other purposes for which wilderness areas are established. Until that occurs, personal philosophies and divisive agendas obstruct wildlife conservation—as illustrated by recent articles describing legal challenges to (Goth 2014; Kreutz 2014), and the subsequent denial of (Tuell et al. 2015), the use of helicopters to support conservation of bighorn sheep in wilderness administered by the Tonto National Forest in Arizona. As emphasized recently, agencies, organizations, academic institutions, and Congress all work under various missions, objectives, and capacities (Vickerman and Kagan 2012). As a result, I fear that interagency competition or bureaucratic inertia (*sensu* Grumbine 1990) will continue to fuel the debate over the potential value of wilderness to wildlife, and the role of wilderness in wildlife conservation. Further, there is a pressing need for consistency in the ways that wilderness legislation is interpreted by agency personnel, as the absence of such consistency remains a major shortcoming and a primary hindrance to wildlife conservation in wilderness (Bailey 1992; Bleich 1999). Parigi (2011) articulated clearly that, "we need to have policies that allow for management intervention. The U.S. Wilderness Act for instance … stipulates restraint in human activity and has no specific requirements that ensure the persistence of wildlife or habitat."

CONCLUSION

More than 40 years ago, Hendee and Stankey (1973) emphasized that "Now is the time for the issue of wilderness management philosophy to be debated in scientific, professional, and political circles." I conclude that the debate must be resurrected, and even expanded, because, in the words of Kurth (2014), that debate is "even more important today" than it was 40 years ago.

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Dr. Vern Bleich has worked for nearly 40 years in the deserts of southeastern California, with a primary focus on the conservation of large mammals inhabiting that arid region. He advocates for meaningful alternatives to a "hands-off" approach to wilderness management in order to ensure the conservation of large, vagile mammals that generally are dependent upon larger areas than the typically small and geographically isolated areas "protected" by legislation in the southwestern United States.

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Table 1. Wilderness areas that include mountain ranges occupied by bighorn sheep and overlap the Lazy Daisy Grazing Allotment, San Bernardino County, California. These mountain ranges and the Old Woman Mountains, in particular, previously had been identified for enhancement of bighorn sheep populations.

Name of Wilderness	Area (ha) of Wilderness	Area (ha) of Allotment	Percent Overlap
Old Woman Mountains	66,260	41,474	62.6
Piute Mountains[a]	20,366	20,366	100.0
Turtle Mountains	4,690	71,714	6.5

[a]The Piute Mountains (identified incorrectly as the Piute Range by Weaver and Hall [1971]), support occasional use by bighorn sheep. Weaver and Hall (1971) noted that with proper management, the Piute Mountains would be an appropriate location to reestablish a permanent population of bighorn sheep.

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