



Review paper

Land use planning: A potential force for retaining habitat connectivity in the Greater Yellowstone Ecosystem and Beyond



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HIGHLIGHTS

- The GYE could become an irreversible habitat island for the grizzly bear.
- Planning levels treated: national, regional, federal agency, state, and county.
- Planning tools treated: purchase, easements, zoning, incentives, boundary authority, exchanges, legislation, and annexation.
- Federal programs and initiatives supportive of regional planning are listed.
- A critical element is county zoning to protect the habitat of large carnivores.

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ABSTRACT

The grizzly bear (*Ursus arctos horribilis*) population in the Greater Yellowstone Ecosystem (GYE) is perceived to have been isolated from the population in the Northern Continental Divide Ecosystem for a century. Better land use planning is needed to thwart progressive intra- and inter-ecosystem habitat fragmentation, especially due to private land development. The dilemma of private lands being intermixed in large landscapes is addressed. This review attempts to identify some land use planning levels and tools which might facilitate dispersal by the grizzly bear and other large mammals. The planning levels discussed include national, regional, state, county and municipal, and federal land management agency. Specific potential federal tools mentioned include zoning, Landscape Conservation Cooperatives, the Endangered Species Act, beyond boundary authority, land exchanges, less-than-fee acquisition and other incentives, the Northern Rockies Ecosystem Protection Act, and federal land annexation. Besides summarizing existing recommendations, some derived observations are offered.

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We have confidence that, because of their mutual concern, such activities [harmful land use] in the vicinity of the public lands will be appropriately regulated by state and local authorities in close cooperation with the Federal agencies. Public Land Law Review Commission (1970, p. 82)

1. Introduction

Yellowstone National Park, and indeed protected US landscapes of all types, attracts large and diverse groups of people (McGranahan, 2008). As these people decide to settle nearby, their movement towards protected landscapes increases development rates outside some protected area boundaries (McDonald et al., 2007); this is documented, for example, at Indiana Dunes National Lakeshore, Indiana (Gimmi et al., 2011). Such increasing development causes habitat fragmentation and loss, judged the most important factor in the decline of biological diversity (Vitousek et al., 1997). Since many recognize that solutions to biological problems like habitat isolation lie in the social, cultural and economic realms (Machlis, 1992), I suggest that land use planning is a key solutions. As things now stand, however, the beginning quote by the PLLRC more than 40 years ago may have been overly optimistic about the potential role of states and local governments in regulating land use adjacent to federal property.

Today, there is increasing discussion about how to conserve large landscapes (McKinney et al., 2010) and the number of different initiatives in the West is inspiring (McKinney and Johnson, 2013). We are rapidly learning that these protected areas may lose their ecological integrity, unless various negative influences outside of their boundaries are dealt with (Shafer, 1990, 2012). The Greater Yellowstone Ecosystem (GYE), a 7.3–14.5 million ha tract in Montana, Idaho and Wyoming, represents one of the fastest growing areas in the nation (Gude et al., 2006). From 1970 to 1999, human population increased by 58% and land supporting exurban development increased by 350% (Gude et al., 2006). Construction of rural homes has been the primary form of land use change in the GYE (Rasker and Hansen, 2000). In the Yellowstone PACE

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