

activity levels (*e.g.*, active, fresh, old, very old) are typically used to monitor the status of a given population.

We understand that there are limitations in the available information addressing the current and historic distribution and abundance of the Columbia Basin and other pygmy rabbit populations. However, the available information provides several important parameters with regard to our listing determination, including: (1) The distribution of the Columbia Basin pygmy rabbit has declined dramatically from historic levels; (2) five of six known subpopulations remaining in the mid-1990s have been extirpated; and (3) the abundance of active burrows and, by extension, individual pygmy rabbits within the last known occupied site, has declined dramatically over this same recent time period. The estimates of individual Columbia Basin pygmy rabbits known to remain in the wild, as presented in the proposed rule and this final rule, represent maximum estimates and are based on the best professional judgement of recognized experts.

As discussed below (*see* Summary of Factors Affecting the DPS), several factors and their interactions are implicated in the historic and recent declines of the Columbia Basin pygmy rabbit, including habitat conversion and fragmentation, wildfire, predation, livestock grazing, and disease. However, addressing the extremely small size and limited distribution of this population is our primary concern for the immediate conservation and protection measures for the Columbia Basin pygmy rabbit. Measures to address the more general and/or long-term threat factors will be identified as our recovery program is further developed (*see* Captive Propagation and Recovery, below).

Livestock Grazing

Issue 7: We received a large number of comments concerning our interpretation of the available information with regard to livestock grazing and the potential effects it has on the Columbia Basin pygmy rabbit. Some comments suggested that we were overly critical concerning the negative effects of livestock grazing and did not adequately address its potential benefits to the Columbia Basin pygmy rabbit. In contrast, other comments suggested that we down-played the negative effects of livestock grazing and implied that regulatory restrictions should be placed on grazing activities in all areas currently or potentially used by the Columbia Basin pygmy rabbit.

Our Response: As with the available information addressing distribution and abundance (*see* above response), we

understand that there are limitations in the available information concerning the effects of livestock grazing on the Columbia Basin pygmy rabbit. However, with regard to adverse effects of livestock grazing, the one study available found several important characteristics—(1) Male Columbia Basin pygmy rabbits tend to make longer movements and require larger home ranges during the breeding season in recently grazed areas as opposed to areas that have not been grazed for several decades (Gahr 1993); (2) there tend to be fewer burrows available to, or constructed by, Columbia Basin pygmy rabbits in recently grazed areas (L. Shipley, pers. comm. 2001); (3) Columbia Basin pygmy rabbits occupying recently grazed sites tend to have a greater proportion of their summer through winter diets composed of sagebrush as opposed to grasses and forbs (L. Shipley, pers. comm. 2001); (4) the nutritional quality of the available grasses and shrubs tends to be less from fall through spring in recently grazed areas (L. Shipley, pers. comm. 2002); and (5) livestock can directly damage pygmy rabbit burrow systems through trampling (Rauscher 1997; N. Siegel, WSU, pers. comm. 2001; M. Hallet, pers. comm. 2002).

Other, more general, information also suggests the adverse effects on the Columbia Basin pygmy rabbit associated with livestock management activities. These other potential impacts include sagebrush control efforts, effects on predator distribution and density through the use of artificial watering or supplemental nutrition and feeding sources for livestock, structural damage to dense stands of sagebrush by livestock, removal of current herbaceous growth or residual cover of native grasses and forbs by livestock for forage, and increases in the density or distribution of various invasive weed species.

The available information described above suggests there is a potential for take of the Columbia Basin pygmy rabbit to occur, as defined by the Act, in association with some livestock grazing operations. These potential impacts may be in the form of direct take (*e.g.*, injury or mortality due to trampling of occupied burrows or sagebrush eradication efforts), or in the form of indirect take (*e.g.*, harm or harassment due to habitat modification or degradation that significantly impairs normal behavioral patterns associated with the Columbia Basin pygmy rabbit's breeding, feeding, or sheltering activities). Due to the extremely low number and restricted distribution of Columbia Basin pygmy rabbits,

additional mortality resulting from livestock grazing practices currently represents a potentially significant threat to their continued existence.

Pygmy rabbits have coexisted with various levels of livestock grazing activities throughout their historic range for many years. Currently, it is unclear if light or moderate levels of livestock grazing may be compatible with, or even beneficial to, long-term conservation efforts for otherwise secure populations of pygmy rabbits. The effects of livestock grazing that have been identified to potentially benefit the Columbia Basin pygmy rabbit include: (1) Increasing the vigor of grass species through mechanical disturbance by livestock; (2) increasing the abundance of sagebrush cover through altered competitive advantage by removal or reduction of associated shrub steppe vegetation; (3) increasing the biological diversity of wildlife and vegetation species; and (4) creating more open habitats that provide improved security through increased visual line-of-sight for pygmy rabbits.

It is our intention, once the captive propagation program becomes better established and appropriate protection measures are in place to ensure the security of the remaining wild portion of the population, to reinitiate or support future studies to address the potential effects of livestock grazing (both positive and negative) on the Columbia Basin and/or other pygmy rabbit populations. These efforts should attempt to include the evaluation of pygmy rabbits in areas subject to various intensities and timing of livestock grazing, areas where livestock grazing has been discontinued for known periods of time, sites that have historically remained free of livestock grazing, and areas of varying soils and initial ecosystem conditions. These evaluations will help fill the current information gaps regarding the effects of livestock grazing on the Columbia Basin pygmy rabbit and provide a basis for analyzing grazing activities under sections 7 and 10(a) of the Act.

The specific conditions under which livestock grazing activities will be addressed in habitats occupied by the Columbia Basin pygmy rabbit will be further defined as our recovery program is developed (*see* Captive Propagation and Recovery, below).

Issue 8: We received several comments concerning the effects of current and historic grazing by native herbivores, such as white-tailed deer (*Odocoileus virginianus*), mule deer (*O. hemionus*), elk (*Cervus elaphus*), and American bison (*Bison bison*), on the Columbia Basin pygmy rabbit. In