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Comments on Mountain Plover, proposal to list *Charadrius montanus* as a threatened species based on recommendation in 5 Dec 2002, Federal Register (FR) (Vol 67 No. 234: 72396-72407).

Based on my assessment of the scientific record presented in the FR, I feel it is appropriate for the Service to list Mountain Plover as a federally threatened species. The evidence is convincing that the species has experienced a significant population decline across its range. In Colorado, one of the major strongholds of the species (Pawnee Grasslands) has experienced a virtual extirpation from a peak of >20,000 individuals in the 1970s to approximately 100 individuals in 2002. Given that researchers estimate that only 8,000-10,000 individuals now exist across the entire range of the species, the outlook for the species warrants federal listing. Although there have been other large populations of Mountain Plovers found in Colorado (e.g., South Park), available evidence suggests a substantial population decline of the species in Colorado, and one that has to be reversed to insure the species is not extirpated from the state, or the country for that matter. Available evidence also suggests that Colorado has the largest number of breeding Mountain Plovers in North America (e.g., 1500 in Montana, 1500 in Wyoming, 200 in Nebraska), thus population trends of Mountain Plovers at Pawnee Grasslands are probably indicative of population trends of the species.

Available evidence suggests that cultivated fields may be Ecological Traps for Mountain Plovers, that is they appear to provide suitable habitat for nesting adults, yet reproductive success is lower (apparent nest success was only 33%, compared to >90% in other habitats) in agricultural landscapes due to nest losses from farm machinery in eastern Colorado. Thus, in some parts of their range, agricultural practice result in sink habitats, which is leading to further declines in the species.

In addition, the record clearly shows that the acreage of available plover nesting habitat continues to decline at a precipitous rate. For example, research by Knowles (2001) found a 13% decline in suitable habitat in his study area from 1991-1999. Rangelands within the range of Plovers declined by over 28,000 ha during a 6-yr period from 1992-97. Although no clear linkage is available between sod-busting of rangelands and direct loss of plover nesting habitat, given the precipitous decline of the species, there has to be a strong correlation between sod-busting and population declines. Therefore, steps must be taken by the Service to stop this loss of nesting and wintering habitat.

The record shows that housing developments in prime plover habitat (e.g., South Park in Colorado) has the potential to have strong deleterious impacts on local populations over the next two decades. Finally, the record presented strong evidence that there is a continued decline of plover wintering habitat in California due to losses of farmlands in the Imperial Valley, modification of current agricultural practices in the region, and the potential for urbanization of the region. Management of Mountain Plover nesting and wintering habitat is a complex issue because the species prefers sparsely vegetated habitats. Thus, the species thrives in areas that are

heavily grazed, both during breeding season and on their wintering grounds. The evidence presented in the record shows that grazing rates are declining on both breeding and wintering grounds, which has a negative impact on Mountain Plovers. This must be a controversial issue because biologists interested in protecting Mountain Plovers are interested in increasing grazing pressure on habitats in eastern Colorado and in the Carrizo Plain Area, whereas many other conservation interests are putting pressure on the government to minimize grazing pressure. All these changes will have continued deleterious negative impacts on Mountain Plovers.

Given the research results presented in the Federal Register, I think the Conservation Measures presented by the Service are prudent and necessary. The Service needs to implement new grazing plans that decrease vegetation height on breeding and wintering grounds to increase habitat suitability for Mountain Plovers. Management strategies need to be implemented on Conservation Reserve Program lands to increase habitat suitability for plovers. There has to be incentives created for private landowners to increase habitat quality for Mountain Plovers.

The Service proposes to initiate a study to determine the impact of farming practices in cultivated fields on Mountain Plover nesting success. It seems to me that research also needs to focus on the relationship between habitat quality (both on breeding grounds and wintering grounds) and adult survival rates. Data presented in this review suggests a mean longevity of <2 years. I wonder why survival rates are so low and what could be done to increase survival rates? I was surprised by the lack of emphasis in this report on efforts to increase adult survival estimates. Where is the bottleneck, on the breeding grounds, wintering grounds, or both? Given the number of pesticides and herbicides that are used on their wintering grounds, what impacts do chemical have on adult survival rates? Also, there was no information presented in this review on dispersal capabilities of Mountain Plovers. Are animals dispersing great distances when habitat becomes unsuitable? Apparently only 50% of population on the wintering grounds has been found, where are the rest of the birds wintering?

The available evidence suggests that future research needs to be conducted on the impact of spring tilling on plover reproductive success and population sizes. Evidence presented in this review suggests that spring tilling could have a major impact on plover reproductive success, thus this research is necessary. Therefore, I suppose I agree with the exempted activities from take until Dec 31, 2004, although I am concerned that steps should be taken soon to enhance Mountain Plover habitat. As stated in this review, this exemption from take will allow biologists time to understand the relationship between existing farmland practices and plover reproductive success. Based on the results of this research, the Service could develop management recommendations to enhance Mountain Plover populations. One concern is that if ongoing research shows that existing management practices on cultivated lands are having a major impact on Mountain Plover populations, it might be very difficult for the Service to implement management recommendations that might change existing management practices because the economic costs might be high. I hope that agricultural interests will not block management recommendations if they are expensive.

Given the negative impact that housing developments must be having on Mountain Plovers in areas such as South Park, Colorado, I hope that the Service does not allow any take in these urbanizing landscapes. Given that South Park is one of the last strongholds for Mountain Plovers in Colorado, steps must be taken to ensure that population declines are minimized in this prime habitat. This is particularly critical because nest success appears to be very high, thus this local population may be one of the few source populations. In addition, if there are other areas within the breeding or wintering range of Mountain Plovers, the Service must insure that no

direct habitat loss due to housing developments occurs. Given the precipitous population decline documented for Mountain Plovers, these steps are necessary to ensure the long-term population viability of the species.

I have no information to provide that would enhance the research record presented in the FR. I have no direct knowledge of biological or commercial trade of Mountain Plovers, I have no additional data on the spatial distribution of breeding or wintering habitat, I have no additional data on plover population trends, I have no additional data on the effects of land practices or habitat use patterns of Mountain Plovers.

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