

subsequent study. It may be advantageous to develop microsatellites specifically for Western Gray Squirrels, rather than adapt microsatellites developed in other species of sciurids.

Thus, the preliminary information from Warheit (2003) suggests that there is genetic differentiation between Washington western gray squirrels, and squirrels from populations south of the Columbia River. We believe that this information supports our contention that western gray squirrel populations in Washington collectively or individually could meet the discreteness criterion of the DPS policy. However, we find that based on the genetic information currently available, the western gray squirrel populations in Washington collectively or individually do not differ markedly from other populations of the subspecies in their genetic characteristics such that they should be considered biologically or ecologically significant based simply on genetic characteristics. Biological and ecological significance under the DPS policy is always considered in light of Congressional guidance (*see* Senate Report 151, 96th Congress, 1st Session) that the authority to list DPS's be used " * * * sparingly" while encouraging the conservation of genetic diversity.

One of the more notable pieces of genetic information in the Washington populations is the lack of genetic diversity. As noted above, this reduction in genetic diversity may be the result of genetic drift and relatively smaller effective populations sizes. While there is clearly some genetic information that shows that the Washington populations are different from other populations (*e.g.*, in the microsatellite DNA analyses no haplotype was shared across the Columbia River, also evidence suggests a long time interval since the Washington and California or Oregon populations diverged), at this time we do not believe them to be markedly so. The information we believe counterbalances the differential information is the fact that all alleles present in each of the Washington populations are also present in at least one of the Oregon or California populations, that some haplotypes in Washington are more closely related to haplotypes in Oregon than other haplotypes in Washington, and the fact that the Washington populations of western gray squirrels show reduced genetic diversity at both nuclear (microsatellite) and mitochondrial (control region sequences) markers.

Information on genetics supports the contention that western gray squirrels in Washington have been isolated from other populations for a long period of

time. The results suggest that genetic differences may occur between populations of the western gray squirrel throughout its range. The genetics studies by Warheit (2003) rely on relatively limited sample sizes for some populations, $n = 3$ for California. Results from the genetics studies may be confounded by the effects of small population size and the consequent inbreeding and genetic drift. The patterns of differentiation that were observed may reflect the negative consequences of isolation, range contraction, and recent significant declines of local populations. To what extent the forces of isolation, genetic drift and/or inbreeding have impacted the western gray squirrel population remaining in Washington is uncertain.

Conclusion

On the basis of available information, we determined that the Washington populations of the western gray squirrel may be discrete in relation to the remainder of the subspecies' populations. This determination is based on information showing that the populations appear to be geographically separated from, and to have some genetic differences from, other populations to the south in Oregon, California, and Nevada as a result of isolation by the Columbia River. But, pursuant to our DPS policy, this apparent directness does not necessarily mean that the populations in Washington are significant to the remainder of the taxon.

Consequently, following a review of the available information, we conclude that the western gray squirrel populations in Washington are not significant to the remainder of the taxon. We made this determination based on the best available information, which does not demonstrate that (1) these populations persist in ecological settings that are unique for the taxon; (2) the loss of these populations would result in a significant gap in the range of the taxon; and (3) these populations differ markedly from other populations of the subspecies in their genetic characteristics, or in other considerations that might demonstrate significance. Further, the available information does not demonstrate that the life history and behavioral characteristics of these populations in Washington are unique to the subspecies. We acknowledge that, while the precise biological and ecological importance of a discrete population segment is likely to vary from case to case, we were unable to identify any other information that might bear on the

biological and ecological importance of these populations.

Significant Portion of the Range

Pursuant to the Act and our implementing regulations, a species may warrant listing if it is threatened or endangered in a significant portion of its range. Consequently, we evaluated the three populations in Washington to determine if they collectively constitute a significant portion of the range of the subspecies. In our evaluation we considered whether the geographic extent of the range of the western gray squirrel in Washington is significant relative to the remainder of the subspecies' range. Based on the extent of the range of the western gray squirrel subspecies, from southern California north to Washington as discussed in the Background section of this notice, we do not believe that Washington constitutes a significant portion of the geographic extent of the subspecies, and subsequently the range of the subspecies. Further, the available information regarding the collective abundance of animals in the three populations in Washington does not indicate that the Washington population constitutes a significant portion of the western gray squirrel population rangewide. Consequently, we have determined that the population of the western gray squirrel in Washington does not constitute a significant portion of the subspecies or its range.

Finding

We have carefully assessed the best scientific and commercial information available regarding the discreteness and significance of the western gray squirrel in Washington. We reviewed the petition, literature cited in the petition, information available in our files, peer-reviewed literature and other published and unpublished literature and information, and information submitted to us during the comment period following our 90-day petition finding. We have consulted with biologists and researchers, including geneticists familiar with the western gray squirrel, and reviewed the status of the western gray squirrel in light of the requirements of our DPS policy. On the basis of the best scientific and commercial information available, we conclude that the populations of western gray squirrel in Washington do not represent a DPS, and are therefore not a listable entity. Our review did indicate that these populations may be discrete from other western gray squirrel populations south of the Columbia River, but under our DPS policy, the Washington populations collectively or individually are not