

wolves in the eastern United States was carried by the several hundred wolves who survived in the State into the early 1970s. The Eastern Team insisted that the remnant Minnesota wolf population must be maintained and expanded to achieve wolf recovery in the eastern United States, and the successful growth of that remnant population has maximized the representation of that genetic diversity among Midwestern gray wolves. Furthermore, the Eastern Team specified that the Minnesota wolf population would increase to 1250–1400 animals, which would increase the likelihood of maintaining its genetic diversity over the long-term, and would provide the resiliency to reduce the adverse impacts of unpredictable chance demographic and environmental events. The Minnesota wolf population currently is estimated to be double that numerical goal.

The need for redundancy was clearly recognized by the Eastern Team members, and they specified that it be accomplished by establishing a second population of gray wolves in the eastern United States. They identified several potential locations for the second population. To ensure that the second population also had sufficient resiliency to survive chance demographic and environmental fluctuations, the Recovery Teams specified a minimum size that must be maintained for a minimum of five years by the second population. If the second population was isolated from the larger Minnesota wolf population, the recovery criteria required that the second population contain at least 200 wolves for a minimum of 5 years. However, if it was near the Minnesota wolf population, the 2 populations would function as a metapopulation rather than as 2 separate and isolated populations; in that case the second population would be viable if it maintained 100 wolves for at least 5 years. A metapopulation is a conservation biology concept whereby the spatial distribution of a population has a major influence on its viability. In nature many populations exist as partially isolated sets of subpopulations termed “metapopulations.” A metapopulation is widely recognized by conservation biologists as being more secure over the long-term than are several isolated populations that contain the same total number of packs and individuals (Service 1994a, Appendix 9, Dr. Steven Fritts). This is because adverse affects experienced by one of its subpopulations resulting from genetic drift, demographic shifts, and local environmental fluctuations can be countered by occasional influxes of

individuals and their genetic diversity from the other components of the metapopulation.

The close proximity to the larger Minnesota population would allow wolves to move between the two populations and would provide substantial genetic and demographic support for the smaller second population. Therefore, the Recovery Team specified a lower recovery goal of 100 wolves if a second population would develop in a location that would allow it to be closely tied to (that is, less than 200 miles from) the Minnesota wolf population. Such a second wolf population has developed in Wisconsin and the adjacent Upper Peninsula of Michigan. This second population is less than 200 miles from the Minnesota wolf population, and it has had a late winter population exceeding 100 animals since 1994.

As described elsewhere in this final rule, there is no convincing evidence in recent decades of another wild gray wolf population in the United States east of Michigan, so the wolves in the western Great Lakes States represents all the known gray wolf genetic diversity found in the Eastern DPS. In other words, the area in the western Great Lakes States where the wolf currently exists represents the entire range of the species within the Eastern DPS. Furthermore, the number of wolves in the Eastern DPS greatly exceeds the recovery goals of (1) a secure wolf population in Minnesota and (2) a second population of 100 wolves for 5 successive years, and thus contains sufficient numbers and distribution (resiliency and redundancy) to ensure the long-term survival of gray wolves within the DPS. The wolf's progress toward recovery in the Eastern DPS, together with the threats that remain to the wolf within the DPS, indicates that the gray wolf is not in danger of extinction in its entire range within the DPS. Moreover, the progress towards recovery of each of the two populations that comprise the metapopulation within the western Great Lakes States demonstrates that the species is not in danger of extinction in any significant portion of the range of the species within the DPS. We therefore conclude that gray wolves are no longer properly classified as endangered in the Eastern DPS.

Western DPS

Similarly, the reclassification and recovery criteria that were found in the Northern Rocky Mountain Wolf Recovery Plan (Service 1987) have been subsequently revised following peer review (Bangs 2002) to provide sufficient representation, resiliency, and

redundancy to ensure the species is no longer endangered in the Western DPS when those criteria are met. Large numbers of wolves in three widely-spaced locations in the Northern U.S. Rockies achieve the desired resiliency and redundancy. Furthermore, the recovery program is based on 3 founder populations from 3 different Canadian source populations having high levels of genetic diversity (Forbes and Boyd 1997, Fritts *et al.* 1997). This has achieved sufficient representation of the genetic diversity from the closest thriving wolf populations in Canada, and allowed the Northern U.S. Rockies wolves to benefit from the local adaptations of those source populations. Additionally, the northwest Montana population remains connected to the Canadian wolf population, providing a conduit for continuing genetic exchange with wolves farther to the north. This connection is exemplified by wolves such as “Opal,” which was radio collared in Banff National Park in Alberta, Canada, and subsequently moved south and successfully raised pups as the alpha female of the Boulder Pack in northwestern Montana.

The three initially isolated gray wolf populations in northwestern Montana, central Idaho, and the Greater Yellowstone Area have expanded in range and increased in numbers to the point that they are no longer isolated from each other and the movement of individual wolves from one to another is becoming more common. Wolf dispersal and interbreeding has been documented between all three core recovery areas within the northern Rocky Mountains (see *Dispersal of Western Gray Wolves*). They are now functioning as a large metapopulation rather than as three isolated populations. The revised recovery criteria specify that at least 30 packs, comprising at least 300 wolves, should exist across the metapopulation's range for a minimum of 3 years. Twenty packs (200 or more wolves) across the metapopulation for 3 years would indicate the species is no longer endangered in the DPS and should be considered for reclassification to threatened status. There have been at least 300 wolves in a minimum of 30 packs since the end of 2000, and at the end of 2001 there were 563 wolves in 34 packs in the Northern U.S. Rockies. There have been over 200 wolves in at least 20 packs since the end of 1997.

The gray wolf's substantial success in meeting the revised recovery criteria for the Northern Rocky Mountains area ensures the wolf's long-term survival within its range in the Western DPS (*i.e.*, the area inhabited by the