Wolf Recovery: A Response to Mech

David Mech's claim in "The Challenge of Wolf Recovery" (spring 2013) that original recovery goals for wolves reintroduced to the Northern Rocky Mountain (NRM) region were "science-based" is unsubstantiated. "Ten packs and 100 individuals" in each of three recovery areas sustained for three consecutive years represents not population viability analysis (PVA) but the "opinions of recovery team members" (USFWS 1987, 2009), later codified by 16 "Yes" responses to 43 questionnaires sent to biologists during preparation of the environmental impact statement (EIS 1994). The EIS acknowledged, then ignored, that an effective population size (N_e) of 500—which "would equate to a total population in the low thousands"—was required for long-term viability. Buffering against environmental stochasticity and climate change requires even higher thresholds (Brook 2008).

A PVA of the 2009 NRM wolf metapopulation showed it to be unsustainable with harvest levels anticipated post-delisting (Bergstrom et al. 2009). The 37 percent human-caused mortality in the year after initial delisting of wolves in Idaho and Montana is well beyond the rate at which wolf populations will begin long-term declines, because human offtake is strongly additive to total mortality (Creel and Rotella 2010). Human-caused mortality of NRM wolves in 2012 was 34 percent (USFWS 2013), a level unprecedented among species recently removed from the endangered species list.

Mech dismisses concerns about Wyoming's plan to kill wolves over most of the state because "very few wolves inhabit" the "Predator Zone" (which is most of the state) and thus "biologically nearly all of that portion of Wyoming is inconsequential to Wyoming's wolf population." But even the rare disperser may be important. Moreover, of 33 wolf packs outside Yellowstone National Park as of December 2012 (USFWS 2013), Wyoming has committed to sustaining 10, and only in a Trophy Game Management Area between the national parks and the Wind River Reservation. Vague promises in the management plan about "encouraging effective migrants into the population" will likely fail under an aggressive harvest unregulated with respect to breeding or dispersal status (WGFD 2013). Dramatically reducing the pool of potential immigrants *and emigrants* in dispersal corridors bordering the core reserves in the Greater Yellowstone Area (GYA; vonHoldt et al. 2008, 2010) will reduce gene flow among NRM wolf populations, further reducing N_e, and increasing inbreeding and thus extinction risk of isolated populations. Wolf populations of fewer than 200 are especially vulnerable to mortality of greater than 25 percent and reduced dispersal (Carroll et al. 2014).

The government acknowledged three times that these dispersal corridors were vital to maintaining demographic and genetic connectivity among the three subpopulations of NRM wolves. They did so in the 1994 EIS, in the NRM delisting rule (USFWS 2009; which raised the *relisting* threshold to 15 packs, 150 animals in each of the three populations), and particularly strongly in 2010 court briefs defending their rejection of Wyoming's proposed management plan (State of Wyoming v. Salazar 2010). Because GYA is the most isolated of the three NRM wolf populations (vonHoldt et al. 2010), reducing it by half—killing all wolves in Wyoming's Predator Zone, and most wolves in the Trophy Zone—could be biologically consequential long-term to the entire metapopulation. Suppressing this population near the relisting threshold, reducing interchange with other NRM populations, and annually subjecting it (and the others) to high mortality will heighten extinction risk. In addition, disallowing wolf dispersal south of the Wind River Range will likely prevent recolonization of substantial areas of unoccupied suitable habitat in Colorado (Carroll et al. 2006). Consequently, in my view, Wyoming's "dispersal sink" management plan will certainly stall, and possibly erode, wolf recovery in prime habitats of the West.

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Improved Communication Skills

Could you send my appreciation to Dr. Joseph K. Gaydos for his article in the recent issue of *The Wildlife Professional*, "How to better communicate as a scientist"? I greatly appreciated his review of the two books, which I now have, and am learning immensely from each.

Also, I really enjoy *The Wildlife Professional*. It is well done, and I am proud to say I am a TWS member when I read it.

David D. Musil
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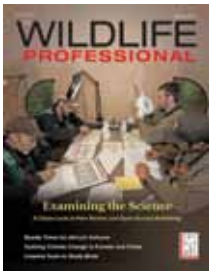

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