WILLIAM W. MERCER
United States Attorney for the District of Montana
MARK SMITH, Assistant U.S. Attorney
2929 3rd Ave. North, Suite 400
Billings, MT 59101
Tel (406)657-6101/ Fax (406) 657-6989

RONALD J. TENPAS
Assistant Attorney General
Environment and Natural Resources Division

JEAN E. WILLIAMS, Section Chief
LISA L. RUSSELL, Assistant Section Chief
KRISTEN L. GUSTAFSON, Senior Trial Attorney
U.S. Department of Justice
Environment and Natural Resources Division
Wildlife and Marine Resources Section
Ben Franklin Station, P.O. Box 7369
Washington, D.C. 20044-7369
(202) 305-0210 (tel.)/(202) 305-0275 (fax)
Kristen.Gustafson@usdoj.gov

Attorneys for Defendants

**UNITED STATES DISTRICT COURT**
**FOR THE DISTRICT OF MONTANA**
**MISSOULA DIVISION**

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| DEFENDERS OF WILDLIFE, NATURAL RESOURCES DEFENSE COUNCIL, SIERRA CLUB, HUMANE SOCIETY OF THE UNITED STATES, CENTER FOR BIOLOGICAL DIVERSITY, JACKSON HOLE CONSERVATION ALLIANCE, FRIENDS OF THE CLEARWATER, ALLIANCE FOR THE WILD ROCKIES, OREGON WILD, CASCADIA WILDLANDS PROJECT, WESTERN WATERSHEDS PROJECT, AND WILDLANDS PROJECT<br><br>Plaintiffs,<br>v. | Case No. CV-08-56-M-DWM<br><br>**DECLARATION OF EDWARD E. BANGS** |

H. DALE HALL, U.S. Fish and Wildlife Service Director; DIRK KEMPTHORNE, Secretary of the Interior; and the UNITED STATES FISH AND WILDLIFE SERVICE

Defendants.

I, Edward E. Bangs, declare as follows:

1. I am a wildlife biologist employed by U.S. Fish and Wildlife Service [USFWS] as a Wolf Recovery Coordinator. In this capacity I was responsible for overall coordination of all wolf-related activities in the Northern Rocky Mountain [NRM] Distinct Population Segment [DPS] prior to the delisting of the NRM DPS. Previously, I was the USFWS project leader for wolf management in Montana from 1988-1992. I led preparation of the Congressionally-mandated Environmental Impact Statement [EIS] (USFWS 1994) to reintroduce wolves to Yellowstone National Park [YNP] and central Idaho from 1992-1994. I was the project leader for the reintroduction of wolves from 1994-1996, and have been the Wolf Recovery Coordinator for the NRM since 1995.

This declaration is based upon a combination of my personal knowledge and experience [see attached resume'] and information provided to me by other USFWS, United States Department of Agriculture Forest Service and Wildlife Services, United States Department of the Interior National Park Service and Bureau of Land Management, State, Tribal, Canadian, and industry and private wildlife biologists and natural resource managers working with gray wolves in or adjacent to the NRM DPS. I have worked on wolf recovery, conservation, and management issues in the NRM since July 1988. I am familiar with and have advised wolf conservation, research, and management programs in other parts of the United States, including being a member of

the USFWS Mexican Wolf Recovery Team. I have also been involved in wolf conservation issues in several other countries, including Sweden (Liberg 2005), so I am very familiar with wolf restoration and conservation issues involving small population size, wolf social structure, dispersal, and mortality rates, habitat suitability and connectivity, founder effect, and genetics.

2. I worked on wolf research and conservation issues, including regulated public harvest of wolves, on the Kenai National Wildlife Refuge in Alaska from 1975-88. Wolves on the island-like Kenai Peninsula were extirpated by 1920. They eventually naturally recolonized the 10,000 square mile Peninsula in the mid-1960s by natural dispersal through a 10 mile-wide land/ice-bridge from the Alaska mainland (Peterson et al. 1984). That wolf population grew to as many as 200 wolves that occupied all suitable habitat by the late-1970s. The wolf population has remained relatively stable through the present time. Wolves there have been harvested under State and Refuge hunting and trapping programs since the mid-1970s. Harvest slightly reduced wolf density for a short period of time in the early 1980s, but since that time the wolf population has remained relatively stable and has been regulated largely by natural factors- despite ongoing liberal public hunting and trapping programs. Despite very few founders, very limited, if any, additional wolf dispersal to the Kenai Peninsula, and continued high levels of human-caused mortality the Kenai Peninsula population remains robust and viable. No conservation concerns have been documented in the past 50 years related to the extremely limited habitat connectivity or genetic viability (Talbot and Scribner 1997).

3. The purpose of this Declaration is to provide additional information regarding Plaintiffs' request for a preliminary injunction seeking to halt the implementation of the USFWS February 27, 2008 final rule that delisted gray wolves in the NRM DPS.

4. The NRM wolf population currently contains approximately 1,513 adult wolves, plus their pups born in spring 2008, in at least 192 packs, 107 of which were classified as breeding pairs in 2007 (Service et al. 2008). The USFWS defines a breeding pair as a pack containing at least an adult male and an adult female and at least 2 pups on December 31. The foundation of any viable population is successful breeding and recruitment into the population so the metric of a breeding pair was developed to ensure biologically meaningful recovery criteria (Mitchell et al. 2008).

5. The USFWS determined that the minimum recovery goal for the NRM wolf population is a three-part meta-population that never went below 30 breeding pairs and 300 wolves in mid-winter. Mid-winter is the low point in the annual cycle of a wolf population and is just prior to the wolf courtship and breeding season, so the spring/summer/fall wolf population is much higher than in winter. A meta-population is a population composed of distinct core segments. In conservation biology a meta-population is desirable to maintain overall population viability because it is more resilient to area-specific disruptions than a single population in just one contiguous area. Meta-population structure theory suggests that if one segment becomes threatened or extirpated other segments would be somewhat protected from the causes of that localized decline and they would then be able to provide a source of individuals to supplement the impacted segment. From a conservation biology and population viability perspective, a meta-population does not require any specific level of natural connectivity between its

segments, just that genetic or demographic exchange can occur if needed. The NRM DPS meta-population consists of wolves in the core recovery areas of northwestern Montana, central Idaho, and the Greater Yellowstone Area [GYA] that includes northwestern Wyoming, southwestern Montana, and southeastern Idaho. Natural wolf dispersal occurs routinely between Canada, northwestern Montana, central Idaho and the GYA. Dispersal to the GYA occurs less frequently than between the other areas but likely occurs annually. Biologically, the NRM wolf is simply a 400 mile southern extension of the vast healthy and harvested adjacent Canadian wolf population.

6. Delisting and subsequent State management will not result in a harmful decline in the NRM wolf population from its current level. An important factor in the USFWS decision to delist the NRM DPS was the commitment made by Montana, Idaho, and Wyoming in their USFWS-approved wolf management plans to each maintain at least 150 wolves and at least 15 breeding pairs in each State and to manage all threats so that the NRM DPS would never again be threatened with extinction. Soon after the post-delisting wolf management plans were approved by the USFWS, the States began developing step-down objectives for management and implementation (including control and public hunting regulations). The USFWS has repeatedly evaluated what a recovered wolf population is and how to measure it and a 3-segmented wolf population that never falls below 10 breeding pairs and 100 wolves per segment [at least 30 breeding pairs and at least 300 wolves], by its very definition, such a wolf population would always be biologically viable and could never be considered threatened or endangered. Part of the State's objectives are to maintain a mid-winter population of over 1,000 wolves in the NRM. Montana will manage to maintain current wolf numbers [about 400 wolves].

Idaho will manage for 500-700 wolves. Wyoming will maintain at least 7 breeding pairs [roughly between 70-98 wolves] in addition to those in National Parks in northwestern Wyoming, currently numbering 171 wolves in 10 breeding pairs. Wyoming Game and Fish Department [WGFD] has also committed to maintain at least 15 breeding pairs and 150 wolves in Wyoming even if there were no wolves in YNP. It is extremely confusing and misleading to think of wolf conservation in the GYA as just wolves in YNP. At the end of 2007 YNP contained 171 wolves, while the GYA contained 453 wolves.

7. Many people, including the plaintiffs, have mistakenly used the term 'Yellowstone' for both YNP and the GYA. Mixing the two terms greatly confuses the important conservation issues related to having only wolves in the 3,400 square mile YNP compared to having nearly three times that many wolves distributed in the approximately 25,000 square mile GYA.

8. In spring 2008, 440-535 wolf pups were likely born and added to the NRM wolf population. This conservative estimate assumes, based on data over the past 20 years, that at least the 107 known breeding pairs in 2007 will produce an average of 5 pups each, and, on average, 4 pups will survive until winter (USFWS et al. 2008). A comparison of theoretical suitable wolf habitat (Oakleaf et al. 2005) and current wolf distribution (Service et al. 2008) indicates the NRM will remain saturated with resident wolf packs because the States have committed to maintain the wolf population over 1,000 individuals and the overall distribution of wolf packs has remained unchanged since 2002 when only 663 wolves were estimated present in the NRM. The absence of wolf breeding pairs in the 88% of Wyoming where the wolf is designated as a predatory animal has no impact on Wyoming's ability to maintain its share of the GYA meta-

population segment because that area is largely highly unsuitable wolf habitat (Oakleaf 2007) and it is not located between the core recovery areas so it can not effect the rate of natural dispersal between the three core recovery areas. The Trophy Game Area of northwestern Wyoming [roughly west of Cody and North of Pinedale] is only 12% of the State but contains over two-thirds of the suitable wolf habitat in Wyoming and all 25 wolf breeding pairs that were in Wyoming in 2007.

9. Since 1995 the NRM wolf population has increased at a rate of about 24% annually. Radio telemetry data indicate that during that same period about 26% of the radio-collared wolves [that includes adults, yearlings, and pups over 6 months of age] died annually. Illegal killing and agency control of problem wolves each removed about 10% of the wolf population annually, another 3% were killed accidentally by vehicle collisions and other human causes, and about 3% died annually from natural causes. Wolf populations are naturally highly resilient to mortality events because of their adaptable social structure and behavior and their potential for high reproductive rates and high pup survival. Wolf populations can maintain themselves despite annual human-caused mortality rates of 30% to 50% (Brainerd et al. 2008; Fuller et al. 2003). Wolf populations below habitat carry-capacity can quickly expand, sometimes nearly doubling within one or two years, following sharp declines caused by temporarily high rates of human-caused mortality or other causes. For example, if the NRM wolf population was reduced to 1,020 wolves [2005 levels and slightly below State management objectives of over 1,100] by State-regulated hunting (which would require the removal of about 620 wolves in both 2008 and 2009 by hunting, in addition to those removed by illegal killing, agency control, accidental killing by people, and natural causes) the population would

remain recovered and would quickly rebound to previous levels. The State hunting seasons are not designed to remove that many wolves but because the NRM wolf population would be below demonstrated habitat carrying capacity [at least 1,513 wolves] it would start to increase at 24% annually if hunting was curtailed. The NRM wolf population would likely grow from 1,020 wolves to 1,513 wolves [2007 levels] within just 2 years. In addition, although delisting allows regulated public hunting of wolves, removal by public hunting may simply replace other forms of pre-delisting wolf mortality (Bangs et al. in press). In other words, it is likely that some proportion of the wolves that would be killed during State-administered hunting seasons would otherwise have been removed by agency control actions, illegal killing, or would have died naturally from disease, starvation, or intra-species strife. Studies indicate that human-caused mortality can compensate for as much as 70% of the natural mortality that might have occurred anyway (Fuller et al. 2003). Hunting would disproportionally remove the boldest wolves in the most accessible open habitats, the very type of wolf in the typical location where most livestock depredations, agency control actions, and illegal killing occurred when the NRM gray wolf was listed.

10. About 200 of the 1,500 wolves present in the NRM in 2007 lived in National Parks. YNP, perhaps the best area in the world to easily view wild wolves, is unaffected by delisting. Because wolf packs rarely leave YNP and usually only for short periods during time-periods when hunting is closed, resident Park packs will be largely unaffected by human-caused mortality resulting from the delisting of the NRM DPS and the implementation of State hunting seasons.. Very few wolves, perhaps less than 20 wolves in three packs and two breeding pairs have home ranges solely on Tribal lands. The

remaining approximately 1,300 wolves live in areas of Montana, Idaho, and Wyoming where State-regulated hunting will occur. Some of those wolves will undoubtedly be legally killed during the fall wolf hunting seasons but this will not affect wolf population viability. If the NRM wolf population continued to grow at typical rates [24% per year] and given a 10% rate of agency-authorized removal of wolves that depredate on livestock and pets, there would likely be over 1,800 wolves in the NRM by fall 2008 when the first State-regulated hunting would begin. The level of public hunting as proposed by the States could not possibly threaten the NRM wolf population.

11. In western Wyoming upon delisting there were at least 28 wolves in 8 packs, none of which were classified as a breeding pair, that had all or part of their home range in the predatory animal area. Between delisting and May 7, 2008 16 wolves have been killed in that area. Four were killed by agency control, one was shot as it attacked livestock [which would have been permitted under the previous federal regulations], two were shot by private aerial hunters under pro-active livestock protection permits issued by the Wyoming Department of Agriculture, and nine were shot by private hunters. The intent of Wyoming's predatory animal status is to minimize wolf presence outside of currently occupied suitable habitat to reduce damage to private property. Wolves designated as predatory animals by Wyoming statute can be liberally killed, although such killing would still be subject to state and federal statutory and regulatory constraints on use of other methods and other limitations. However, wolves in this portion of Wyoming do not contribute to maintaining wolf recovery in the NRM DPS. In the past most wolves in this area were removed annually by federal agency control after chronic livestock depredations before they could successfully breed and raise young.

12. Wolves in the Trophy Game Area in northwestern Wyoming are managed by WGFD to maintain at least seven wolf breeding pairs in suitable wolf habitat in addition to those in YNP. There were a total of 36 packs and 25 breeding pairs in all of Wyoming in December 2007. No breeding pairs live outside the trophy game area because there is limited suitable habitat and federal agency control previously removed most wolves in the area because of persistent chronic conflict with livestock. Trophy Game regulations protect wolves in that area and since delisting only three wolves have been killed in the trophy game area. Two were killed illegally and one was legally shot as it attacked livestock.

13. The main difference between the former federal wolf management program and the post-delisting State-led wolf management program is the use of regulated public hunting to help manage wolf density and distribution in suitable wolf habitat. The States have indicated they will use public hunting to stabilize or slightly reduce the current numbers of wolves in the NRM wolf population. State defense of private property regulations would also be liberalized but such take is not expected to result in a significant increase in the overall rate of wolf mortality. No wolf hunting is allowed in National Parks. While States may issue shoot-on-sight permits to help address livestock depredation issues, just as the USFWS had done, no State-regulated hunting of wolves listed as trophy game or a similarly protected State designation will occur before fall 2008 and the States have finished their various State processes for establishing big game hunting seasons, bag limits, and quotas. Under cooperative agreements with the USFWS, Montana and Idaho have successfully managed wolf populations within their States for the past 3-4 years and those populations greatly increased. Those States have committed to manage their State

program for control of problem wolves in a similar fashion to that conducted under federal authorities since 1994. Wyoming's wolf management plan also committed WGFD to use similar procedures to those used in the USFWS regulations to help manage wolf/livestock conflicts and implement wolf control. State-authorized wolf control to reduce conflicts with livestock will not threaten wolf recovery.

14. In late April 2008, WGFD and the USFWS signed an Interagency Personnel Action to assist in a smooth transition from federal to state-led wolf management and conservation in Wyoming. Starting April 28, 2008 the former USFWS Project Leader for Wolf Recovery in Wyoming who led wolf recovery efforts in Wyoming for the past 10 years, Mike Jimenez, assumed the State WGFD Wolf Project Coordinator position as a USFWS employee under a cooperative agreement between USFWS and WGFD. His expertise and leadership will act to continue professional and experienced wolf management and conservation in northwestern Wyoming.

15. The States of Montana, Idaho, and Wyoming plan to implement regulated wolf hunting seasons, which will be closely managed based upon the health and size of the respective wolf population within each State. Similar public hunting seasons have been successfully used to help manage and conserve other resident wildlife in those States including mountain lions, black bears, elk, and deer. Such wolf hunting will not begin until the fall of 2008 and would not threaten the wolf population. Montana proposed a hunting season that would generally occur the same time as the fall elk and deer hunting season, but up to 25% of the total allowable quota could be taken in December. Wolf hunting would only be allowed until the quota for the general big game or the separate December season is reached. There are three wolf hunting areas, each with an individual

quota. In addition, smaller areas having separate sub-quotas (a portion of the total quota established for the larger wolf management unit) have been authorized, if needed, to help maintain a well-distributed wolf population and prevent localized over-harvest in sensitive areas such as next to National Parks. Montana's quotas are yet to be determined by the Montana Fish, Wildlife and Parks Commission but the goal is to have around 400 wolves well-distributed throughout suitable habitat in Montana remaining in January 2009 when the wolf population is near the lowest level in its annual cycle.

In Idaho, wolves would be hunted during the general fall big game hunting season with quotas within dozens of individual hunting districts. The intent is to maintain a well-distributed wolf population between 500 and 700 wolves in January 2009 and promote the opportunity for natural wolf dispersal into other areas, including the GYA. Idaho regulations allow the take of up to approximately 328 wolves in Idaho, by all known sources of mortality primarily agency control, hunting, and other human-causes.

Wyoming is currently designing its trophy game wolf hunting season, but like Montana and Idaho's hunting season, Wyoming's hunting season could not begin until fall 2008. Wyoming committed to maintain at least 15 breeding pairs and at least 150 wolves in northwestern Wyoming and, in addition, to maintain at least 7 breeding pairs (likely representing at least 70-100 wolves) outside the National Parks to maintain a well-distributed wolf population in suitable habitat in the Trophy Game area of northwestern Wyoming.

16. Wolves in some areas of the world prey extensively on livestock, which generates tremendous local public animosity (Fritts et al. 2003). A critical part of the NRM wolf recovery and conservation program is the control of wolves that attack livestock and

other domestic animals to maintain public tolerance of wolves (Bangs et al. 2004, 2005). Wolf depredation on livestock has been kept at relatively low levels because of the combination of non-lethal deterrents, wolf relocation, and wolf removal (Bangs et al. 2006) but wolf depredation still seriously affects some livestock producers. The USFWS clearly recognizes that private compensation for confirmed wolf-damage only reimburses a fraction of the actual damage to livestock producers caused by wolves (Bangs et al. 2005, 2006). In 2007, wolves in the NRM were confirmed to have killed at least 183 cattle, 213 sheep, 14 other livestock, and 10 dogs. In response, 186 wolves were killed in agency authorized control actions in 2007 (Service et al. 2008). Nonlethal control measures can help reduce the rate of depredations but are often economically infeasible, impractical, and ineffective by themselves and can not significantly reduce long-term livestock losses in absence of targeted lethal control. Since 1987 the Service and its cooperators have utilized and evaluated a wide range of nonlethal and lethal management practices to reduce wolf-caused damage to private property (Bangs et al. 2006).

17. Since 1987 the USFWS authorized, pursuant to ESA Section 10a(1)(A); 63 FR April 23, 1998; 50 CFR 17.84; 59 FR 6052, November 22, 1994; 70 FR 1286, January 6, 2005 the killing of 724 wolves that had depredated on livestock and met USFWS criteria for lethal removal. In recent years we have killed a higher percentage of the wolf population each year because most suitable habitat – where conflicts are least likely-- is already occupied by resident wolf packs. Yet the overall NRM wolf population has still increased at a rate of 24% annually. Since wolf packs are territorial and do not tolerate trespassing wolves, dispersing wolves must try to form new packs in unoccupied areas. Because most suitable habitat is occupied by resident packs dispersing wolves try to

establish new packs in unsuitable habitat where chronic conflicts with livestock are likely. As new wolf packs try to reestablish themselves in areas, such as open heavily grazed agricultural land in southern Wyoming, where conflict is likely to be chronic, those wolves must continue to be removed by agency and private control. If the wolf population continues to grow the number of domestic animals and livestock killed, the economic losses, and the level and cost of agency control required to resolve those conflicts will all occur at an increasingly higher rates. The boldest wolves in the most accessible areas of open habitat are those most likely to cause livestock damage and would be the most susceptible to removal by public hunting or State defense of property regulations.

18. In specific response to the plaintiff's memorandum in support of motion for preliminary injunction, I offer the following response which is based on and entirely consistent with the Administrative Record, which has not yet been filed.

A. The plaintiffs argue that the wolf population has not met its recovery targets established by the USFWS nearly twenty years ago. This is not accurate. The USFWS determined the 1987 recovery goals were inadequate based on the most recent scientific thinking. The wolf population has now greatly exceeded our improved recovery criteria (USFWS 1994) and State management will assure the wolf population continues to do so into the foreseeable future [up to 100 years for some threats]. More importantly, the recovery goals for the NRM wolf population have been constantly revised and strengthened as our scientific knowledge of conservation biology, population viability, and wolf ecology expanded. The USFWS reevaluated what constituted a recovered wolf population described in the 1987 revised wolf recovery plan (Service 1987) during the

1994 EIS process (Fritts and Carbyn 1995; USFWS 1994, Appendix 9), and we re-checked that determination through an extension peer review and literature review in 2002 (Bangs 2002). In response to public comment and the most recent scientific knowledge we also further modified the post-delisting monitoring section and criteria for status review and potential relisting between the 2007 proposed and 2008 final rule to guarantee that the recovery criteria (never less than 10 breeding pairs and 100 wolves per State/Recovery Area) for breeding pairs, wolf numbers, and wolf distribution conform to the latest scientific thinking about viability in wildlife populations and to ensure they would always exceed minimum population viability levels. The NRM system is a functioning meta-population composed of three core recovery zones. Wolves have been documented to disperse between its segments and even without any dispersal between them each segment is large enough, genetically diverse enough, and has enough secure suitable wolf habitat to never be threatened or endangered. If for some unforeseen reason natural dispersal or the wolf population vital rates were not sufficient to sustain a particular core recovery segment the States have committed to relocate wolves if necessary. Conservation of a metapopulation does not require solely or any natural dispersal as the plaintiffs allege. Because of its location, that area of Wyoming where wolves are designated as predatory animals is immaterial to maintaining the potential for natural wolf dispersal between the core population segments.

B. The plaintiffs allege the USFWS peer reviews of recovery goals were biased. However, a review of those contacted in 2001 reveals a wide diversity of experts and perspectives, ranging from Dr. Reed Noss who promotes re-wilding theory in which possibly 25% of North America would be converted back into natural landscapes to Dr.

Charles Kay who hints at government and environmental conspiracies against hunters and landowners, to employees of the plaintiff organizations involved in this litigation (See attached list). We intentionally selected such a wide diversity of reviewers to solicit strong differences in opinion and a diversity of perspectives. The experts selected to review the earlier recovery goal analysis by Fritts (Service 1994), the State wolf management plans, and the final delisting rule, including the recovery criteria, are recognized as among the most experienced and professional wolf and conservation biologists in North America. Virtually none of those experts ever suggested a wolf population must contain 2,000-5,000 wolves to be considered viable or recovered. The scientific peer review conducted throughout this process was unquestionably transparent, thorough, professional, and objective, and exceeded routine scientific standards for peer review (73 FR 10526, referring to Office of Management and Budget's Final Information Quality Bulletin for Peer Review).

C. The plaintiffs mistakenly assert that a recent paper by vonHoldt et al. (2007) demonstrates unresolved significant threats to the GYA meta-population segment simply because it is less connected by suitable habitat than the other two segments are to each other and to Canada (Oakleaf et al. 2006). The plaintiffs mischaracterized the Oakleaf study, which I was a co-author. It only addressed theoretical habitat suitability for persistent wolf packs and possible high quality dispersal corridors and did not investigate actual dispersal or genetic issues. The plaintiffs biased perspective of the putative threat that limited habitat connectivity between the GYA and other recovery areas also may have resulted from a misinterpretation of the vonHoldt et al. study. That study conducted an analysis of wolf population genetics in only YNP, not in the GYA into which radio-

collared wolves from Montana and Idaho have dispersed and where some have likely bred. YNP is saturated with wolves and there is simply no room left for wolves to disperse into YNP, logically explaining the past limited evidence of genetic or radio-collared wolf dispersal into YNP itself. However, while YNP is 3,400 square miles in size and contained 171 wolves in 2007, it is a fraction of the GYA which is 25,000 square miles in size and contained approximately 432 wolves in 2007. Wolves in National Parks remain fully protected by Park regulations regardless of delisting.

The vonHoldt et al. (2007) analysis clearly demonstrated that wolves in the Park deliberately outbreed to maximize genetic diversity and the current population is extremely genetically diverse and absolutely no problems currently exist. It is surprising that the paper then used a theoretical model, whose basic assumption is that there is no strong outbreeding selection, to suggest wolves in YNP [not the GYA] might become inbred and suffer reduced pup survival in a few generations. That prediction is understandable based on the theoretical conditions analyzed in the model but they are faulty and misleading assumptions when compared to the on-the-ground facts in the GYA including; (1) DNA samples were analyzed from only a portion of only YNP wolves, and only until 2004; (2) It assumes no dispersal has occurred or will occur despite radio telemetry data documenting that dispersal has likely occurred on an annual basis in the GYA and despite extensive field data demonstrating that lone wolves routinely disperse through large expanses of unsuitable habitat. The average dispersal distance of wolves in the NRM is 60 miles and wolves in the NRM and elsewhere throughout the world routinely disperse much farther distances than those separating the GYA segment from central Idaho [<100 miles] and northwestern Montana [<130 miles]; (3) It incorrectly

assumes that the only wolves in the GYA will be those in YNP. Based on this erroneous assumption, the model was capped at 170 wolves, not the over 450 that exist in northwestern Wyoming, southwestern Montana, and southeastern Idaho (the winter GYA population), nor the much higher population levels that occur in spring after pups are born; (4) It assumed that the States would reduce wolf populations to bare minimum levels of 100 wolves and 10 breeding pairs each, when in fact the States will be managing for over 1,000 wolves in the NRM and likely for greater than 300 wolves in the GYA; (5) It assumed that the USFWS or States would fail to recognize connectivity as a potential conservation issue (the vonHoldt et al. paper was published before the Final Rule was completed). On the contrary the Final Rule contained extensive literature review and analysis of potential connectivity and genetic issues, as well as an analysis of the State's commitments to fully address such issues if they ever arose; (6) The vonHoldt et al. study also cited examples of wolf inbreeding depression in populations started by two to three founders and that remained at low levels for many years [e.g. the wolf population in Sweden] to suggest similarities with or future problems for the GYA population, when the GYA is nothing like the small populations where inbreeding has been detected. Within 12 years the GYA went from 41 founders in 1996 to over 453 wolves in 2007, and; (7) Finally, even if the worst-case and highly improbable scenarios speculated on in that paper came to fruition [reduced genetic vigor within 60 years leading to reduced pup production to 4 pups per litter instead of the current 5 pups per litter] the wolf-population in YNP would still be saturated with wolves and wolf density in YNP itself would be unaffected, and certainly not threatened. The vonHoldt et al. study is commendable for its genetic analysis and insight into pack relationships between wolves. Its analysis and

conclusions about wolf outbreeding and pack social relationships within YNP based on those genetic data appeared appropriate. However, the theoretical opinion and 'what if' speculations regarding future wolf conservation were based on numerous inaccurate assumptions and overly pessimistic predictions, as detailed above. While intellectually stimulating, and certainly a potential issue for all wildlife managers to be aware of, a thorough factual review of those specific vonHoldt et al. predictions [as was conducted in the final delisting rule] clearly demonstrates that the NRM wolf population will not be threatened or endangered in the foreseeable future by habitat connectivity, wolf dispersal, or genetic viability, even without the promised management intervention by the affected States if it was ever needed.

D. The plaintiffs allege that Wyoming's 2007 wolf plan (Wyoming 2007) retains the inadequacies of the 2003 wolf plan (Wyoming 2003) that was not approved by the USFWS. This is not accurate. A comparison of the Williams (2004) letter and the reasons Wyoming's 2003 regulatory framework was not approved and the subsequent Hall (2007) letter clearly demonstrates that Wyoming's 2007 wolf plan and legislation resolved all three reasons that the 2003 Wyoming regulatory framework was not approved by the USFWS in 2004. Wyoming's 2003 regulatory framework was not approved for three primary reasons; (1) Wyoming's predatory animal area was too large and its fluctuating border too confusing, (2) Wyoming's definition of a pack was inconsistent with the USFWS recovery goal criteria of breeding pairs, and (3) Wyoming did not clearly commit to maintain 15 breeding pairs and 150 wolves in Wyoming and to maintain 7 or more breeding pairs in suitable habitat outside the Park Units. The 2007 legislation and revised Wyoming wolf management plan specifically resolved all three

issues. Wyoming; (1) established an enlarged fixed-border trophy game area that including most suitable habitat and all the areas that have historically contained wolf breeding pairs in Wyoming, (2) measured recovery by the USFWS standard of breeding pairs, and (3) committed to maintain 7 breeding pairs outside the National Parks and at least 15 breeding pairs and 150 wolves in Wyoming regardless of how many breeding pairs and wolves were in National Parks. The 2007 Wyoming wolf plan is a solid science-based conservation plan that will adequately conserve Wyoming's share of the GYA wolf population so that the NRM wolf population will never be threatened again.

E. The plaintiffs allege that State regulatory mechanisms are inadequate because they authorize unlimited wolf killing for 'predator control' purposes. The USFWS has removed problem wolves since 1987 and the wolf population has continued to expand at 24% annually average rate despite an average annual removal of 10% of the wolf population for chronic livestock depredation. State laws and wolf management plans in Montana, Idaho, and Wyoming commit them to each maintain at least 15 or more breeding pairs and at least 150 or more wolves. The States have committed to do so in a manner patterned after the USFWS nonessential experimental population rules first enacted in 1994 and modified in 2005 and 2008. In addition, lethal predator control activities, by agencies and/or individuals, will be modified or even halted if recovery might ever be jeopardized. In addition only a small proportion of wolves chronically depredate in any given year so legally authorized predator control, similar to that authorized by the USFWS since 1994 could not affect a large enough proportion of the wolf population to impact recovery. Lethal control for wolves listed as trophy game but attacking livestock or domestic animals is adequately regulated in Montana, Idaho, and

Wyoming and each State provided safeguards in their management plans and implementing regulations to ensure wolf recovery is never compromised.

F. The plaintiffs allege that delisting will irreparably harm wolf packs and possibly the NRM wolf population because breeders will be killed by people. Wolves, including breeders, have been and will continue to be killed by people in the NRM but the loss of individual wolves, including breeders, within a population does not mean the wolf population is impacted. I was a co-author on a peer-reviewed publication looking at the effects of breeder loss on wolves (Brainerd et al 2008). All wildlife populations have social structures and wolf social structure becomes symbolically important to people because they believe it closely resembles human social structure. In contrast to the plaintiffs' allegations of the fragile nature of wolf packs, our paper and other intensive work clearly demonstrated how amazingly resilient wolf pack structure is to losing breeders and population turnover (Brainerd et al. 2008; Mech 2003; Mech 2006). Wolf packs routinely lose breeding adults and in the Brainerd et al. analysis nearly one-third of the loss of breeders resulted from natural causes. Packs quickly replace breeders and pack members can easily successfully raise pups if breeders are lost. This adaptable social structure is one the primary reasons wolves are such an adaptable, successful, and resilient species. Wolves throughout most of the world are often killed by people and wolf populations remain viable. Most wolf populations in North America (representing about 60,000 wolves) and in other parts of the world are hunted, trapped, and individual wolves are killed through a wide variety of other methods by people. Wolf biologists know a tremendous amount about the impact of various rates of human-caused mortality on wolf social structure, wolf packs, and wolf populations (Fuller et al 2003). Loss of

breeders may be a concern in very small recovering wolf populations that are at low density, with fewer than 75 wolves, in packs smaller than 6 wolves that contain 3 or fewer adults, and when pups are less than 6 months old. However, none of these conditions apply in the NRM where there are over 1,500 wolves; wolves are at high density; suitable wolf habitat is saturated with resident wolf packs; and pack size averages 10 members in more protected areas like Parks, wilderness areas, and remote public lands, and 6 members per pack outside of those types of areas in winter- after most annual wolf mortality has occurred (Service et al 2008). All wolves eventually die, so packs have to constantly replace breeders with or without significant levels of human-caused mortality and that resilient social structure is a natural part of wolf social behavior and ecology.

18. In conclusion, State management after delisting will not threaten the NRM wolf populations long-term survival based on the States' written commitments in their wolf management plans, including regulating the rate of agency and private wolf control allowed under State law. State agency authorized removal of problem wolves would continue in a similar framework to the special federal regulations in place since 2005 in the experimental population areas. Even if removal of problem wolves in trophy game areas of Montana, Idaho, and Wyoming doubled from the current rate of 10% per year to 20% per year under State management it would still not significantly impact overall wolf distribution or numbers from current levels. In Wyoming's predatory animal area removal of all wolves would not affect the number or overall distribution of breeding pairs or impact recovery in the NRM. Regulated public hunting by the States will not be implemented until fall 2008. Such hunting would increase the rate of human-caused

mortality to the wolf population but would be strictly regulated to maintain well over 1,000 wolves in a well-distributed meta-population. A population of that size far exceeds USFWS minimum recovery levels and would continue to allow wolves to occupy nearly all suitable wolf habitat in the NRM DPS. Any additional human-caused mortality by agency authorized control or regulated hunting would certainly not threaten the NRM wolf population. It would have limited impact on the wolf population including its overall numbers and distribution, recovery status, dispersal patterns and potential for natural connectivity, genetics, and/or social structure. Increasing the types of wolf management tools such as additional removal of depredating wolves and public hunting by the States would likely reduce damage to private property (Bangs et al. in press) but would not affect wolf population viability.

In accordance with 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed in Helena, MT on this 9th day of May 2008.

Edward E. Bangs **EDWARD E. BANGS**

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