Mladenoff et al. Rebut Lacks Supportive Data

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Abstract

I contend the Mladenoff et al. (2006) rebuttal to my article (Mech 2006), "Prediction failure of a wolf landscape model," itself fails. Mladenoff et al. (2006:878) provide no data to support their claim that the model "...continues to successfully predict wolf recolonization in Wisconsin, USA, over more than 25 years." I find this critical lack of supporting data puzzling, and it substantiates why I felt obligated to publish my original cursory analysis (Mech 2006). Prior to preparing my manuscript, I tried for several years to persuade Mladenoff et al. to conduct a Geographic Information Systems test of their model using the data available from 101 new wolf-pack territories. I believe in the absence of these data, my analysis is appropriate. (WILDLIFE SOCIETY BULLETIN 34(3):882–883; 2006)

Key words

Science is self-correcting, and anyone who has published much appreciates that his or her findings are tentative until confirmed or refuted. It is incumbent on each of us to test and challenge established dogma when necessary in the quest for scientific truth. I take this quest seriously. With habitat-suitability models, which so often are used by agencies as though the models represent reality, I agree with Garshelis (2000:147) that ". . . the models are really hypotheses in need of testing." (Now, more recently, even the methods used in habitat-selection models have been deemed inappropriate [Keating and Cherry 2004].)

Two years after the Mladenoff et al. (1999) model appeared and the Wisconsin, USA, wolf population had added 35 territories to the original 14 territories on which the model was based, I visually compared a map of Wisconsin wolf-pack territories with the Mladenoff et al. (1999, fig. 2) wolf-habitat-probability map. I found that many of the new pack territories had formed where Mladenoff et al. (1999) had indicated that colonization probability was 0–9%. A more careful comparison using 101 new territories (Mech 2006) confirmed my findings. It appeared that a "predictive" model published a few years earlier was failing to predict the recolonization. I conveyed my concerns to one of the co-authors of the model. I suggested that, if the authors' Geographic Information Systems (GIS) confirmed these findings, they needed to be published. Realizing that my methods were less sophisticated, I stated, "Again the GIS will be the ultimate determinant."

In 2002 I contacted Dr. Mladenoff by e-mail and he agreed to check my analysis. Over the next few years, our e-mail exchanges continued. By 2005, 66 more wolf-pack territories had colonized Wisconsin. Because no new GIS analysis of the recolonizations had been done to this point by Mladenoff et al. (2006), I prepared a manuscript to report my findings.

Although my analysis was not GIS-based, I believe, given the magnitude of the recolonizations, the model's probability map and a map of the existing territories could be visually compared (Mech 2006, figs. 1, 2). In essence, I believe the disparities between the predictions and reality are so obvious that in many cases, a GIS analysis is not needed. Many wolf-pack territories exist in low-probability areas, especially in northwestern and south-central Wisconsin, and wolves have not colonized extensive areas of high probability in northeastern Wisconsin.

Thus, I argue the "predictive" model merely described early colonizing wolf range; then, extrapolating from those findings, it purported to predict with various probabilities where new wolf packs would colonize. Because the model basically redescribed what Thiel (1985) had already found for the same area (and Mech et al. 1988 for Minnesota, USA), any value of the new study resided in its predictive ability. The original model was published in 1995 (Mladenoff et al. 1995). Based on 34 new wolf-pack territories formed from 1997 to 2000, my comparison had indicated that only 35% had established where the model predicted there was a high probability (50–100%) of territory establishment. Five territories (15%) had formed in areas of almost zero probability. I contend this does not constitute a very successful prediction even a few years after the model was published.

Mladenoff et al.'s (2006) claim that availability of various habitat probabilities needs to be considered in such an assessment undercuts the putative value of the model. I argue, if the claim now is that wolves use habitat-probability types in proportion to their availability, then what is the value of designating predictive probabilities of use? In other words, to explain high wolf use of low-probability areas by stating that more such areas exist tends to contradict the model's claim that it has found areas of differing probabilities of use. I contend, the fact is that extensive areas of 75–100% probabilities exist in northeastern Wisconsin that are still not colonized while numerous territories have been established in 0–9% probabilities in northwestern Wisconsin (Mech 2006, cf. figs. 1, 2).

I agree, it is possible that some of my findings could have resulted from my necessarily less-refined approach. Thus, the most convincing and effective way to refute my findings would have been for Mladenoff et al. (2006) simply to have redone their GIS analysis using the same up-to-date data as I did and then to have produced a simple table comparing the results of my analysis with those of their GIS analysis. I would gladly welcome this analysis. Whether my results end up being right or wrong, my quest for scientific truth will have been satisfied.

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Literature Cited

Garshelis, D. L. 2000. Delusions in habitat evaluation: measuring use, selection, and importance. Pages 111–164 in L. Boitani and T. K. Fuller, editors. Research techniques in animal ecology. Columbia University, New York, New York, USA.

Keating, K. A., and S. Cherry. 2004. Use and interpretation of logistic regression in habitat-selection studies. Journal of Wildlife Management 68: 774–789.

Mech, L. D. 2006. Prediction failure of a wolf landscape model. Wildlife Society Bulletin 34:874–877.

Mech, L. D., S. H. Fritts, G. Radde, and W. J. Paul. 1988. Wolf distribution in Minnesota relative to road density. Wildlife Society Bulletin 16:85–88.

Mladenoff, D. J., M. K. Clayton, T. A. Sickley, and A. P. Wydeven. 2006. L. D. Mech critique of our work lacks scientific validity. Wildlife Society Bulletin 34: 878–881.

Mladenoff, D. J., T. A. Sickley, R. G. Haight, and A. P. Wydeven. 1995. A regional landscape analysis and prediction of favorable grey wolf habitat in the northern Great Lakes region. Conservation Biology 9:279–294.

Mladenoff, D. J., T. A. Sickley, and A. D. Wydeven. 1999. Predicting gray wolf landscape recolonization: logistic regression models vs. new field data. Ecological Applications 9:37–44.

Thiel, R. P. 1985. Relationship between road densities and wolf habitat suitability in Wisconsin. American Midland Naturalist 113:404–407.