From:	Pat Deibert
To:	Jodie Delavan; Chris Warren; Steve Abele; kendra womack; Jason Pyron; Renee Chi; Shawn Sartorius; Beth Dickerson; Terry Ireland; Amy Nicholas
cc:	Brad Rogers; Pauline Schuette; Scott Covington; Brian T Kelly; Ken Berg; Paul Henson; Bob D Williams; Scott Hicks
Subject:	Fw: New sage-grouse nesting paper: Importance of managing at multiple scales
Date:	09/08/2010 02:45 PM
Attachments:	sage-grouse scale paper.pdf

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fyi - Please share with whoever wants to know!

Pat

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Dave Naugle <dave.naugle@cfc.umt.edu>	To	undisclosed-recipients:;
	cc	
09/08/2010 02:00 PM	Subject	New sage-grouse nesting paper: Importance of managing at multiple scales

Dear conservation partners,

Wanted to share a new sage-grouse paper from the Powder River Basin (attached) that stresses the importance of making local-scale habitat decisions within a broader landscape context to achieve desired management outcomes. Abstract is below for busy folks to quickly peruse. Recall that Kevin now works for Fish and Wildlife Service in Bismarck, ND, at kevin_doherty@fws.

gov, and Brett is at Colorado Division of Wildlife in Grand Junction at brett.walker@state.co.us. Only bad thing about being a University guy is that I only get to work for a short time with such competent and fun people like Kevin and Brett before they're off on their next adventure—thanks guys. Dave.

Doherty, K. E., D. E. Naugle, and B. L. Walker. 2010. Greater sage-grouse nesting habitat: The importance of managing at multiple scales. Journal of Wildlife Management 74:1544-1553.

ABSTRACT.—Considering habitat selection at multiple scales is essential to fully understand habitat requirements and management needs
for wildlife species of concern. We used a hierarchical information-theoretic approach and variance decomposition techniques to analyze habitat
selection using local-scale habitat variables measured in the field and landscape-scale variables derived with a GIS for nesting greater sage-grouse (*Centrocercus urophasianus*) in the Powder River Basin (PRB), Montana and Wyoming, USA, 2003–2007. We investigated relationships between habitat features that can and cannot be mapped in a GIS to provide insights into interpretation of landscape-scale–only GIS models. We produced models of habitat selection at both local and landscape scales and across scales, yet multi-scale models had overwhelming statistical and biological support. Variance decomposition showed that local-scale measures explained the most pure variation (50%) in sage-grouse nesting-habitat selection. Landscape-scale features explained 20% of pure variation and shared 30% with local-scale features. Both local- and landscape-scale habitat features are important in sage-grouse nesting-habitat selection because each scale explained both pure and shared variation. Our landscape-

scale model was accurate in predicting priority landscapes where sage-grouse nests would occur and is, therefore, useful in providing landscape context for management decisions. It accurately predicted locations of independent sage-grouse nests (validation R2=0.99) and showed good discriminatory ability with >90% of nests located within only 40% of the study area. Our landscape-scale model also accurately predicted independent lek locations. We estimated twice the amount of predicted nesting habitat
within 3 km of leks compared to random locations in the PRB. Likewise we estimated 1.8 times more predicted nesting habitat within 10 km of
leks compared to random locations. These results support predictions of the hotspot theory of lek placement. Local-scale habitat variables that
cannot currently be mapped in a GIS strongly influence sage-grouse nest-site selection, but only within priority nesting habitats defined at the
landscape scale. Our results indicate that habitat treatments for nesting sage-grouse applied in areas with an unsuitable landscape context are
unlikely to achieve desired conservation results.

sage-grouse scale paper.pdf