



**Release:**  
July 2012

**Contacts:**  
Michael L. Casazza  
Peter S. Coates

**Email:**  
[mike\\_casazza@usgs.gov](mailto:mike_casazza@usgs.gov)  
[pcoates@usgs.gov](mailto:pcoates@usgs.gov)

**Phone:**  
530-669-5075  
530-669-5073

USGS Western Ecological Research Center | Dixon Field Station | 6924 Tremont Road, Dixon, CA 95620

## Greater Sage-Grouse Brood Survival Linked to Perennial Forbs and Meadow Edge

Habitat selection by brood-rearing greater sage-grouse (*Centrocercus urophasianus*) may influence the survival of their chicks. Understanding habitat preferences can help sagebrush resource managers focus their conservation priorities and balance land use planning.

USGS researchers conducted radiotelemetry on 38 sage grouse broods within Mono County, California, during 2003–2005, and examined habitat factors at different spatial scales. The findings are reported in the book *Ecology, Conservation, and Management of Grouse*.

At relocation and random sites, researchers measured habitat characteristics at three spatial scales using field procedures (scale, 0.03 ha) and GIS data (scales, 7.9 ha and 226.8 ha). Researchers sought to (1) identify habitat factors that were selected by sage grouse broods; (2) identify habitat factors associated with brood success; and (3) evaluate brood success as a function of habitat selection indices for brood-rearing sage grouse.

At the smallest spatial scale (0.03 ha), grouse with broods selected areas with greater perennial forbs and higher richness of plant species. At larger scales (7.9 ha and 226.8 ha), areas with Utah juniper (*Juniperus osteosperma*) and singleleaf pinyon pine (*Pinus monophylla*) encroachment were avoided by grouse.

Most importantly, the probability of fledging a brood increased as sage grouse females selected habitats with greater densities of perennial forbs (0.03 ha), as well as higher meadow edge (perimeter to edge ratio; 7.9 ha) — perhaps because these areas provided a balance of food and protective cover for chicks.

These results suggest that managers should discourage tree encroachment and preserve and enhance sagebrush stands interspersed with perennial forbs and a mixture of small upland meadows.

### Management Implications

- Most sage-grouse with broods selected areas with increased perennial forbs and meadow edge, and avoided areas with pinyon-juniper trees.
- Sage-grouse that selected areas with increased forbs and meadow edge had higher brood survival probabilities than grouse that did not select those areas, perhaps because those areas provided food and protective cover.
- These results suggest that managers should discourage tree encroachment, and preserve and enhance sagebrush stands interspersed with perennial forbs and a mixture of small upland meadows.

#### THIS BRIEF REFERS TO:

Casazza, ML, PS Coates, CT Overton. 2011. Linking habitat selection to brood success in greater sage-grouse. In: Sandercock, MK, K Martin, G Segelbacher (eds.). 2011. *Ecology, Conservation, and Management of Grouse*. University of California Press. p. 151-167.

<http://www.werc.usgs.gov/ProductDetails.aspx?ID=4745>  
<http://www.werc.usgs.gov/casazza>



Telemetry data from brood-rearing greater sage-grouse — such as this hen — was analyzed in conjunction with habitat data collected via ground surveys and remote sensing data.