

WHITE PAPER
DRAFT FOR DISCUSSION – December 9, 2009

***Western Regional Wildlife Decision Support System:
Definitions and Guidance for State Systems***

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Members of the Western Governors' Wildlife Council

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Western Governors' Wildlife Council (WGWC)

Alaska

Kimberly Titus
Chief Wildlife Scientist
Division of Wildlife Conservation
Department of Fish & Game

Arizona

Bob Broscheid
Assistant Director
Wildlife Management Division
Game and Fish Department

California

Kevin Hunting
Deputy Director
Ecosystem Conservation Division
Department of Fish and Game

Colorado

Tom Remington
Director
Division of Wildlife

Idaho

Sharon Kiefer
Assistant Director, Policy
Department of Fish and Game

Kansas

Keith Sexson
Assistant Secretary of Operations
Wildlife Section
Department of Wildlife and Parks

Montana – Vice-Chair

Joe Maurier
Director
Department of Fish, Wildlife & Parks

Nebraska

Dave Dingman
Policy Analyst
Energy Office

Nevada

Dave Pulliam
Habitat Division Chief
Department of Wildlife

New Mexico

Tod Stevenson
Director
Department of Game and Fish

North Dakota

Terry Steinwand
Director
Game and Fish Department

Oklahoma

Richard Hatcher
Assistant Director
Department of Wildlife Conservation

Oregon

Holly Michael
Conservation Policy Coordinator
Office of the Director
Department of Fish and Wildlife

South Dakota

Tony Leif
Wildlife Division Director
Department of Game, Fish, and Parks

Utah - Chair

John Harja
Director
Public Lands Policy Coordination Office
Office of the Governor

Washington

John Mankowski
Policy Advisor, Natural Resources
Office of the Governor

Wyoming

John Emmerich
Deputy Director
Game and Fish Department

Western Regional Wildlife Decision Support System: Definitions and Guidance for State Systems

Background and Introduction

One of the primary tasks of the Western Governors' Wildlife Council is to establish a useful and consistent source of mapped biological information across the Western States that decision makers and the public can use to identify and better understand crucial wildlife habitat and corridors. The Western Governors' Association's 2008 report, *Wildlife Corridors Initiative*, recommended each state create a Decision Support System (DSS) to assist in this effort. State DSSs would be used to compile information; assure data quality; and make the data, models and analyses available at scales useful to anyone analyzing proposed energy, land use, and transportation projects or examining climate adaptation strategies¹. Each statewide or joint DSS would include a description of appropriate uses and limitations of the underlying data and models for assessment purposes based, in part, on the capability of the data to support multiple scale analysis. The intent of the DSS would be to support wildlife corridor identification, conservation planning, and gross infrastructure siting efforts. In most cases, the DSS would not support detailed assessment at the individual project scale but likely will contain relevant information to advise or guide individual project assessment.

The DSSs will utilize landscape-level mapping to show crucial wildlife habitat and wildlife corridors, and can identify areas that warrant more fine scale analysis. State DSSs will be non-regulatory, developed to promote the conservation objectives of each state wildlife agency, and will give the public access to important wildlife information for use in proactive planning and decision-making processes. The development of these systems will include on-going monitoring and updating of data to maintain their relevancy. While housed in each state, data utilized in the systems will be coordinated across all jurisdictions in the West so that a regional picture of wildlife sensitivities and corridors will be available.

This paper focuses on DSSs that would be developed and used by individual states, while promoting the prospects for and benefits of integrating systems and their component information across jurisdictions.

¹ The Wildlife Council home page and the *Wildlife Corridors Initiative Report* can be found at: http://www.westgov.org/index.php?option=com_content&view=article&id=123&Itemid=68.

Estimated Cost of Establishing State-Based DSSs

Previous Congressional testimony from WGWC members in early 2009 estimated a cost of \$1million per state over three years to establish wildlife DSSs in Western states. This was a general cost estimate based on work to date in some states. However, any estimate is dependent upon a number of factors, including the status of each state's efforts to digitize and organize their internal wildlife data, and on funding that may become available to pilot coordination of data across political boundaries. As the WGWC begins developing DSSs using the guidance outlined in this white paper, costs estimates may need to be adjusted and those estimates will also likely vary among the states. Once a system has been established, maintenance and updates will be an additional and on-going cost that will also vary among the states and cannot be estimated at this time.

Development of this Paper and Ongoing Revisions

This paper was developed in part by state wildlife agency representatives designated by each Council member to serve on the Science and/or DSS Subgroups. The Science Subgroup had several conference calls from July through September of 2009 to further refine the definitions of “crucial habitat” and “wildlife corridors” from those initially developed in the *Wildlife Corridors Initiative* report. The Science Subgroup also developed guidelines for compiling and analyzing compatible information for a DSS. Significant work completed by Montana’s Fish, Wildlife and Parks’ staff as part of their “Crucial Areas and Connectivity Assessment” was utilized as a starting point for the Science Subgroup’s discussions. The DSS Subgroup held weekly conference calls in June 2009 to create a valuable compilation of information from the *Wildlife Corridors Initiative* report and to expand that information to include recommendations for DSS components. The Science Subgroup considered and incorporated their work, much of which was influenced by the efforts of state wildlife agencies and WGA to map sensitive wildlife habitats as part of Phase 1 of the Western Renewable Energy Zones initiative.²

Revisions to this paper by the Wildlife Council will be ongoing. The Wildlife Council has already worked to incorporate comments from partners, and will continue to do so in future revisions, particularly to enhance guidance in the analytical and information delivery steps.

Regional Definitions

This paper includes definitions of crucial habitat and corridors for wildlife and presents guidelines that states can use to develop regionally compatible DSSs. Crucial habitat definitions have been refined further from those included in the *Wildlife Corridors Initiative Report* to help states prioritize habitat and corridors within their boundaries in order to meet a state’s

² http://www.westgov.org/index.php?option=com_content&view=article&id=219&Itemid=81.

conservation objectives. These refined definitions are a necessary first step to achieve the compatibility and consistency of categorizations for species across state boundaries.

With established definitions, states can begin the process of assembling important data and addressing data standardization issues, analyzing and prioritizing that data by category based on habitat conservation needs, and turning that data into a useful tool. These steps are outlined in this paper.

Coordination with Federal Agencies

This White Paper was also developed specifically to assist with coordination efforts with federal land management agencies that also undertake extensive wildlife mapping efforts. To truly develop a regionally consistent picture of wildlife in western states it will require ongoing collaboration with the Fish and Wildlife Service, the Bureau of Land Management and the Forest Service, among others. The Western Governors' Association signed a Memorandum of Understanding with the Secretaries of Agriculture, Energy and the Interior in June 2009 that calls for the establishment of state-based decision support systems and for cooperation among state and federal agencies in the identification and uniform mapping of habitat and corridors.³

The federal agencies did provide preliminary feedback on the White Paper at the October 2009 meeting of the Wildlife Council. Yet, to undertake the longer term coordination envisioned under the MOU, the Wildlife Council established a State-Federal Implementation Group (SFIG) that will guide the needed coordination on an ongoing basis. One of the objectives of the SFIG will be to facilitate active federal participation in the future development of the White Paper. Federal designations have been made to the group, and regular meetings and communications of the SFIG are anticipated going forward.

Department of Energy Funded Wildlife DSS Pilot Studies

In accord with the MOU signed in June 2009, the Department of Energy made electricity transmission planning resources available for state-based wildlife pilot studies that would help to further develop DSSs based on geographically specific pilot efforts. Funds have not yet been awarded, but DOE is scheduled to make that determination shortly. The Council will work with partners to establish a draft of this white paper in early 2010 that will be used to direct DOE-funded pilot projects and test the utility of the regional DSS framework set forth in this paper. It is anticipated that the ongoing implementation of the pilots will inform and warrant further revisions to this paper.

³ http://www.westgov.org/index.php?option=com_content&view=article&id=123&Itemid=68.

Ongoing Stakeholder Input

Significant stakeholder feedback on the white paper was also presented to the Council at their October meeting. To coordinate with non-governmental representatives, industry and other stakeholders going forward, the Council established a broader stakeholder advisory group to serve as a longer-term sounding board for the Council on the White Paper, the pilots and other issues related to wildlife DSS development in Western states.

Crucial Habitat⁴ and Important Wildlife Corridors Definitions

The *Wildlife Corridors Initiative Report* contains definitions for crucial habitat that were a starting point for consideration by the Science Subgroup. The Science Subgroup made minor clarifications to the original definitions. The definitions are:

Crucial habitats are places containing the resources, including food, water, cover, shelter and “important wildlife corridors,” that are necessary for the survival and reproduction of aquatic and terrestrial wildlife and to prevent unacceptable declines, or facilitate future recovery of wildlife populations, or are important ecological systems with high biological diversity value.

Important Wildlife Corridors are crucial habitats that provide connectivity over different time scales (including seasonal or longer) among areas used by animal and plant species. Wildlife corridors can exist within unfragmented landscapes or join naturally or artificially fragmented habitats, and serve to maintain or increase essential genetic and demographic connection of aquatic and terrestrial populations.

More refined, actionable definitions for subsets of crucial habitat, including important wildlife corridors, are presented on page 6 of this document.

Categories of Crucial Habitat Conservation, Including Important Wildlife Corridors

The conservation of crucial habitat, including important wildlife corridors, is recognized by the Western Governors as an important goal for state, local and federal governments that can benefit from the adoption of compatible and consistent conservation categories across state and other jurisdictional boundaries. The Western Governors’ Wildlife Council will encourage each state adopt the following categories of crucial habitat conservation. These categories would then be populated as determined by each state. Other habitat categories, besides crucial habitat, may be defined by states as resources are available.

⁴ Crucial habitat as used by the Western Governors’ Wildlife Council should not be confused with a legally defined critical habitat designation. Critical habitat is determined by the U.S. Fish and Wildlife Service or the NOAA Fisheries Service to be habitat necessary for species listed under the provisions of the Endangered Species Act.

Category 1: Aquatic or terrestrial habitats, including wildlife corridors, that are rare or fragile and are essential to achieving and/or maintaining wildlife species viability or diversity. The habitat contains a unique combination of location or composition or complexity of the habitat or corridor which cannot be duplicated, and is therefore considered irreplaceable.

Category 2: Habitat, including wildlife corridors, which is limiting to a fish or wildlife community, population, or metapopulation. Loss of any of this habitat or corridor could result in a significant local or population-level decline in species distribution, abundance, or productivity. The habitat or corridor is essential to achieving and maintaining fish and wildlife target population or management objectives. Restoration or replacement is difficult, or may be possible only in the very long term.

Category 3: Habitat, including wildlife corridors, that contributes significantly to the maintenance of fish or wildlife communities, populations, or metapopulations. Loss of a significant portion of the habitat or corridor could result in local or population-level declines in species distribution, abundance, or productivity. Impacts can be minimized or reduced, and habitat or corridors restored or replaced by utilizing appropriate best management practices.

Other Habitat Categories

The following categories represent common habitat or otherwise insufficiently understood habitat that can be mapped to provide a full landscape perspective, but are not anticipated to be indicative of crucial habitat. The Western Governors' Wildlife Council recognizes that some states may, as resources allow, choose to analyze and map these other categories in a compatible manner with other states.

Common Habitat: Habitat which is relatively common, generally less limiting to fish and wildlife communities, populations, or metapopulations, and generally better suited for land use conversion. Large-scale or cumulative impacts to species or habitat could result in declines in species distribution or abundance, however, the loss may be difficult to measure. Impacts from individual projects or land use actions can be minimized, and habitat restored or replaced, so that effective habitat function or species distribution or abundance is maintained.

Habitat Significance Unknown: Lands likely to have significant wildlife values, but for which there is insufficient data or a lack of information about the importance of the habitat in meeting conservation objectives.

Guidance for Compiling Compatible Information for Analysis and Display

The Western Governors' Wildlife Council recommends that states utilize the steps below as they begin to identify or reclassify crucial habitat and wildlife corridors, map those areas, and develop a system for displaying the information. These steps were established recognizing that the Council may not yet have enough information to recommend the full execution of each step. Details for Step One, compiling raw information, have been substantially developed at this point. The Council has listed relevant information for states to include in their DSSs, highlighting the minimum data that should be analyzed to identify or reclassify crucial habitat, including wildlife corridors, in each state. Recommendations for a regional approach to Steps Two and Three have not yet been fully discussed. The Council has identified significant challenges associated with both the analytical and information delivery steps, and will consider how to devote additional resources to addressing these challenges. It is anticipated that further development of these steps will in large part be assisted by efforts of the multi-jurisdictional wildlife pilots proposed by WGA for funding by DOE.

Step One: Compile types and layers of information valuable in identifying crucial habitat, including important wildlife corridors (aquatic and terrestrial)

The list below describes information that each state should consider including in their DSS. The list is separated into two tiers, the first tier being those data layers that are considered to be the foundation of any DSS and which states commit to including, as a minimum, in their systems. Second tier data can be important to identifying crucial habitat and corridors and maintaining conservation objectives. A tiered approach allows individual states to prioritize their data collection and standardization efforts as they build their DSS. Having all states working with the same base categories of data in tier one will allow DSSs to function effectively across political and jurisdictional boundaries.

This inventory will help develop the necessary technical components of a regionally comparable and compatible system, and will form the target information necessary for states to perform analyses in Step Two. This list represents data categories, with multiple examples of data sources, which could be used to help delineate crucial habitats and corridors. The list includes both species and habitat data, understanding that in some instances known species occurrence data is used as a surrogate for identifying habitat.

Tier 1 Data:

1. Habitat for "Species of Concern"

- Species of Greatest Conservation Need (within State Wildlife Action Plans or similar assessments) The following data sets should be included with the SGCN:
 - Locations of Federally or State Listed Species (Threatened or Endangered)
 - Including Candidate Species
 - Species protected under a signed Conservation Agreement

- Other species of special concern lists (county/state/federal)
 - Key or Priority Habitat boundary delineations from CWCS/SWAP
 - Plant and Animal species with special protective-rankings (e.g., NatureServe's Natural Heritage global ranks)
 - Priority habitat areas based on species diversity, habitat intactness and overlap with other crucial habitats. These would be high priority areas for SGCN population management, "core conservation populations."
2. Areas of Significance for Species of Economic and Recreational Importance: This category provides for species consideration if not otherwise included as Species of Concern.
- Sport Fish Quality Habitat: areas recognized as important to meeting biological requirements and objectives of fish species whose harvest is regulated (i.e. blue ribbon streams)
 - Game Animal Quality Habitat: areas recognized as important to meeting biological requirements of game species regulated by harvest, such as winter concentration areas or important breeding areas (i.e. crucial big game ranges, grouse lek locations or core grouse habitats if designated)
3. Native and Unfragmented Habitat: Areas that are contiguous, possess a high degree of intact core areas or diversity of natural habitat, or supply ecological function to meet wildlife objectives. These areas are unfragmented, or relatively unfragmented, by transportation routes, human habitation, industrial infrastructure, or other human-caused disturbances.
- Natural Vegetation Classification habitat maps
 - Ecological systems of concern
 - Plant communities of concern (Heritage Rankings)
 - Priority habitat areas identified in updated SWAPs
4. Riparian and Wetland Habitat: Areas that represent unique environments and function to support animal and plant diversity with respect to wildlife objectives and connectivity.
- Spring/Seep/Cienega Locations
 - National Wetlands Inventory
 - National Hydrologic Database
 - Wetland components from State Comprehensive Outdoor Recreation Plans
 - Priority wetland areas and priority riparian habitats identified in updated SWAPs
5. Connectivity or Linkage Assessment: Areas described explicitly for aquatic or terrestrial wildlife habitat connectivity.
- Major animal movement corridors or pathways (documented)
 - Landscape connectivity zones

Tier 2 Data:

6. Terrestrial or aquatic native species richness: Areas where species composition represents a native, intact community and where habitats are associated with a relatively high and distinctively described species assemblage.
 - Aquatic species distribution maps
 - Ecoregional Assessments – Biodiversity Areas
 - Audubon Important Bird Areas
 - Gap-ReGap species composite maps
 - Christmas bird count and breeding bird survey data

7. Valued Lands: Lands that are protected or designated for their wildlife or aquatic values.
 - Protected Areas Database (PAD)
 - Priority Areas Identified from Ecoregional Analyses
 - Dedicated conservation lands locations
 - Outdoor Recreation Priority/Favored Areas

8. Important Restoration Habitat: Lands that are proximate to other important habitats and have the potential to restore function or resiliency to target populations of fish and wildlife.
 - Spawning or rearing habitat for fishes that are isolated from current populations
 - Habitat that was historically in one of the crucial habitat categories (2 or 3) and could provide fish or wildlife benefits with restoration

Step Two: Once input data is compiled, states will consider analysis of information (methodology, modeling, and prioritization) to rank areas as crucial habitat and wildlife corridors.

The Western Governors' Wildlife Council will address identifying and applying possible commonalities to the state analysis or ranking processes. Among other items, individual states will have to consider the following challenges as they develop the analytical (and spatial) maps for crucial habitat, including wildlife corridors:

- Prioritization or ranking models that can be utilized to assist the analysis;
- Appropriate scale of mapping;
- Data compatibility with neighboring jurisdictions;
- Use of best available science in GIS format;
- Development of consistent protocols (e.g., standards for defining and collecting data for shared use); and,
- Identification of state-specific targets for spatially explicit analytical outcomes.

States may develop management recommendations to accompany their analysis as a parallel effort or separately once the analysis and mapping step is completed.

Step Three: States develop the Decision Support System as a tool to help deliver crucial habitat and corridor information to appropriate users.

There will be many technical considerations involved in developing a tool that is user-friendly and transparent. Emphasis should be placed on an information delivery system that promotes ready access and stimulates early consideration in planning by users, with or without the need for direct agency staff contact. States will need to address the following challenges when working to develop a platform that can be compatible across the region:

- Systems must be capable of “talking to each other” across jurisdictions.
- Data quality must be assured.
- Data, models and analyses must be built at useful scales to provide relevance to land use projects.
- Transparency and public input must be accommodated.
- Evaluation is needed on an ongoing basis to ensure efficacy of DSSs to meet conservation objectives.

Next Steps and Conclusion

The Wildlife Council understands that additional resources and effort are necessary to achieve its goal of developing compatible state-based wildlife Decision Support Systems across the Western states. Among other things going forward, the Council will examine the structure of the subgroups, especially as to the best way to include the science and technical expertise of state wildlife agency staff. How to integrate outside science and technical expertise, as well as customer perspectives, into work of the subgroups should also be considered.

Finally, the resources WGA is requesting from the DOE for state wildlife agencies to conduct wildlife pilot studies will be invaluable in testing, on-the-ground, the regional framework that is beginning to be developed in this paper. It will be imperative for the Council to ensure that lessons learned from these pilots are well understood, integrated into efforts to develop a regional framework, and shared across the region.