

Western Governor's Association - Wildlife Corridors Initiative
Science Committee
Protocols for Information Delivery to Support the Initiative
November 12, 2007

This effort of the Western Governor's Association is to provide for a science-based perspective on areas of the western states' landscape that represent "crucial wildlife habitat" and "important wildlife corridors", as defined for this initiative. The Initiative's Science Committee established the following definitions:

Crucial Habitats *are places containing the resources, including food, cover, shelter, and "important wildlife corridors" that contribute to survival and reproduction of wildlife, are necessary to prevent unacceptable declines, or facilitate future recovery of wildlife populations.*

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 populations. Wildlife corridors can include:*

- 1). Connections that may not be fully and routinely occupied by species of interest but serve to ensure that such species are able to use disconnected tracts of habitat, and,*
- 2). Habitat that serves as permanently occupied stepping-stones to facilitate multi-generational movement between larger habitat areas.*

We operationally define crucial habitat as including (a) the main population centers (as defined by each state) or the most limited seasonal range that determines how many animals can be sustained of the species listed in Attachment 1, (b) areas important for biodiversity or groups/guilds of species in each state, (c) water bodies important to wildlife species, and (d) priority habitats identified in the state's Comprehensive Wildlife Conservation Strategy (State Wildlife Action Plans), TNC Ecoregional Assessment, or state Natural Heritage Program. We operationally define important wildlife corridors as significant seasonal migration paths and other areas the state recognizes as important for genetic and demographic connectivity.

The intent of the WGA Wildlife Corridors Initiative is to examine development and related impacts within the context of wildlife corridors and crucial habitat. Specifically WGA is focusing on the following four areas of development/impacts:

- Energy (Transmission, Oil & Gas, Renewables, etc.)
- Land Use and Growth
- Transportation and Roads
- Climate Change

This effort has a near-term objective and a long-term goal. The near-term objective is to produce a preliminary information base and associated mapping capability to illustrate current knowledge and mapping of crucial habitats and important corridors on the landscape of the 19 western states of the U.S., including Alaska and Hawaii. The long-term goal is to describe a process by which

this type of information can be consistently compiled and maintained in an enduring, dynamic information system to support landscape-level analysis of how land uses intersect with significant wildlife and habitat features.

For the contiguous states, the intent is for the information and related mapping to be relatively seamless and indicative of ecological context. For all states, it is intended that the analysis area be buffered sufficiently to illustrate important ecological connectivity with surrounding area (other state or international). The products of all efforts are intended to be informative in ready identification of especially sensitive areas that warrant further review and evaluation with respect to the full array of prospective land uses. As such, resultant mapping will illustrate areas for consideration, not areas for automatic prescriptive or prohibitive controls. Specific treatments of any land area will be determined through the further resource evaluation that is stimulated by the distinct intersection of a land use or uses with the wildlife and habitat resources identified. Ultimately, the information, analytical capabilities, and maps are expected to refine the landscape illustrations and the resultant specificity of planning perspectives.

Near-Term Protocol

During the time frame of November 2007-June 2008, a seamless, western states information base will be compiled and illustrated that displays crucial wildlife habitat and important wildlife corridors. This effort will be based on state-by-state judgments of what areas of the landscape qualify within the scope of definitions above.

- Each state fish and wildlife agency, in conjunction with pertinent cooperators, will perform the necessary data compilations and/or analyses to prepare and deliver the standard information sets, in standard form, requested in this protocol. This includes compiling and integrating relevant data sets from the federal government, conservation groups, and academia. WGA recognizes that not all of the data requested will be available from all of the states. Indeed, being able to identify gaps in data is a crucial aspect of the Science Committee's work, in order to develop recommendations for filling gaps and ultimately building the mapping tools that we envision.
- All submitted information will be compiled by WGA with the assistance of ESRI, displayed for Science Committee evaluation, and evaluated to identify data gaps that could be feasibly addressed with individual state agency staff. This work will occur between November 2007 and May 2008. In June, the maps will be presented to the Governors along with recommendations for improving the maps and for filling data gaps. After the June Governors' meeting, WGA will begin implementation of the recommendations for improving the maps and filling data gaps.
- All 19 states in the WGA will be involved in compiling information by these protocols. However, for interim example products, emphasis will be placed on using the area encompassing Montana, Wyoming, Colorado, New Mexico, and Utah.

Each state wildlife agency is requested to meet the following protocols and deadlines:

- By November 28 2007, each state is asked to provide WGA a point person for contact and data compilation
- By December 20, 2007, pilot states of CO, NM, UT, WY, & MT should prepare and submit the information sets described in Attachment 1 and 2.

- By January 21, 2008, all other states, TNC, and Natural Heritage Programs should submit those information sets with applicable Federal Geographic Data Committee (FGDC)-compliant metadata, in a format described in Attachment 1 and 2.
- All data should be submitted to the ESRI Contact, Heather Paskevic, hpaskevic@esri.com, 303-449-7779 x8282.
- via FTP, e-mail attachment, or digital media
- Respond to any queries from ESRI contact during January – February 2008 to clarify information submitted and fill identified data gaps as possible
- Provide comment on draft west-wide information illustrations during March – April 2008 in preparation for finalizing the final products of the near-term protocol

We recognize at this stage of information development that some crucial habitats and wildlife corridors will not be mapped using this operational definition, and that the maps based on this procedure may include some areas that do not meet the definition of crucial habitat and wildlife corridors.

NOTE: By January 21, 2008, the Science Committee will identify, solicit and compile other relevant data sets (beyond states) using the format described in Attachment 1.

Long-Term Concept and Protocol

Beyond the immediate scope of developing short-term protocols for mapping crucial wildlife habitat and important wildlife corridors, the Science Committee will also propose direction for refinement and continuing improvement of the habitat and corridor maps. Key to the Committee's long-term concept will be the reduction of uncertainty associated with mapping through research, first by testing the ability of generated maps to predict accurately crucial habitats and important corridors, and second by generating new information to address critical gaps in understanding.

While developing the near-term products of this initiative should 'jump start' regional collaboration, they will also highlight areas where new effort is needed. Recent broad-scale efforts across western states have clarified approaches, information, and analyses that are essential to effective regional wildlife conservation. The process for developing Comprehensive Wildlife Conservation Strategies provided many useful lessons for implementing systematic conservation analyses, effective public involvement, and communicating needs for wildlife habitat conservation in each state. Ecoregional assessments completed since 1999 by The Nature Conservancy and partners in each of some 35 western ecoregions offer additional lessons for integrating conservation data across political borders, engaging multi-disciplinary expertise, and implementing science-driven processes for identifying crucial wildlife habitat.

With these and other experiences, we can now envision effective protocols to focus investments in information gathering, analysis, management, and sharing. These protocols should support regional integration, maximize mutual benefit, minimize conflict, and above all, support the long-term viability of Western wildlife. They should support the integration of wildlife habitat needs into land use planning - at federal, state, and local levels - and flexibly support adaptation as conditions change. Finally, these protocols should clarify focused investments in critical information by each level of government and by the private sector. Development of long-term

protocols is underway, but it is not considered further here as the immediate focus of the Science Committee is on compiling and submitting near-term information.

Attachment 1 -- Substance and Form of Information to be Prepared and Submitted

Requested Fields for short-term analysis (due from CO, NM, UT, WY, & MT by December 20th, 2007; From all other Western states by January 21, 2008)

For all data, provide field definitions and metadata. For spatial data, it is critical to provide spatial projection. See details related to format of data under 'Form' section of document below.

Crucial Habitat – See Attachment 2 for further description of information requested

1. Provide information set for perennial and sensitive ephemeral water bodies meeting crucial habitat definition.
2. Provide information set for vegetation communities that are conservation priorities identified in Comprehensive Wildlife Conservation Strategy for the state.
3. Provide information set of crucial habitat areas identified in Comprehensive Wildlife Conservation Strategy for the state (e.g., areas identified as high priority locations to support one or more species of interest).
4. Provide information set of crucial habitat areas identified in The Nature Conservancy Ecoregional Assessments for the state (e.g., 'portfolio' areas of high significance identified to efficiently support biodiversity within each ecoregion). *
5. Provide information set of crucial habitat areas identified as "potential conservation areas" identified through statewide inventories of the Natural Heritage programs. *
6. Provide individual information set for crucial habitat tracts for each of the following pilot list of species that occur in your state:
 - Elk
 - Mule Deer (Black-tailed Deer may be shown as separate information set)
 - Bighorn Sheep (Rocky Mountain and Desert subspecies may be separate information sets)
 - Black Bear
 - Mountain Lion
 - Sage Grouse
 - Pronghorn
 - Marmots
 - Burrowing owls
 - Leopard frogs
 - Black and white-tailed prairie dogs
 - Long-billed curlew

Important Wildlife Corridors

Provide information set of any tracts meeting the “important wildlife corridors” definition. The vector or shape file for each important wildlife corridor will have at least two attributes, namely Type and Priority Level. The three Corridor Types are:

1. Seasonal Migration Corridor for mammals (such as seasonally migratory elk, mule deer, or pronghorn). These should be depicted as polygons, as available, including attribute on months of usage.
2. Generalized linkage areas for genetic and demographic connection for multiple species between mapped crucial habitats. This reflects a situation in which the state has identified general areas where connectivity between crucial habitats is needed, but lacks a detailed analysis identifying the exact shape of the area to be conserved as a wildlife corridor. Each such wildlife corridor should be mapped as a straight-edged polygon that includes the area within which future analysis will identify a specific corridor. The WGA policy workgroups may propose future analyses (corridor designs) as an appropriate mitigation for certain types of projects within Generalized Corridors.
3. Specific Corridor for genetic and demographic connection for multiple species between mapped crucial habitats. This reflects situations in which the state has a detailed corridor design identifying specific areas predicted to facilitate gene flow and movement of focal species. Each such wildlife corridor should be mapped as a polygon that may include multiple strands to serve various focal species. Some states may not have any Specific Corridors.

Form of Data Submission

- Provide all information sets above in a projected coordinate space.
- Submit all information sets above as shapefiles (.shp) including the .prj file, or in personal or file-based geodatabase format including the .prj file (projection file) for each dataset.
- Provide compliant metadata for all information sets to the degree it is available. Metadata should be consistent with Federal Geographic Data Committee (FGDC) standards. Specific metadata that is requested, at a minimum:
 - Abstract
 - Attribute descriptions
 - Spatial reference
 - Data author and contact information
 - Clarify assumptions that are made in the models produced
 - Date of data (or relevant time period of the data)
 - Data permission (can we use and share this data?)
- Data should be submitted in vector format but supplementary raster data will also be accepted.
- The map of important wildlife corridors should not include areas that are simply a highway right-of-way crossing a mapped crucial habitat area. The WGA policy group will make appropriate recommendations to conserve or restore connectivity for all transportation projects through a crucial habitat area.

Supplemental information

Any specific data files, in any original form (with associated metadata), may be submitted that are germane to the metadata for derived information sets described above

Attachment 2 -- Specific description of information requested in Attachment 1

Specific description of information pertaining to crucial habitat types #1-3.

Information about sensitive water bodies (#1), vegetation communities (#2) and crucial habitat areas (#3) identified by the states for their Comprehensive Wildlife Conservation Strategies is not managed in a standardized format. The following list describes the general data types that should be provided, to the extent that they are available, in whatever format the data exist currently. If it will not be obvious to the user, please include metadata that explains which data fields contain these data types.

- Unique polygon or grid identifier
- Site, place or area name (if applicable)
- Descriptive information about what the polygon encompasses and why it was mapped
- Known precision or accuracy of polygon or grid
- Sensitivity of the information represented (describe any sensitivities associated with release of this information in mapped form)
- Relative importance of the area mapped (using any applicable criteria already employed by the state)
- Targeted Habitat found in the mapped area:
 - Terrestrial ecosystem or vegetation types represented in site (no standard crosswalk required)
 - Freshwater ecosystem or community types represented in site (no standard crosswalk required)
- Species data (occurring within the mapped area):
 - Targeted Species data (can be multiple species/guilds/groups)

Specific description of information pertaining to crucial habitat types #4-5.

The following are data types and/or specific database fields found in Biotics (managed by state Natural Heritage programs), and/or the ecoregional databases of The Nature Conservancy.

(Conservation) Site related data:

Unique identifier (e.g., conservation site_shapeID in Biotics or CAID from The Nature Conservancy)

Conservation Site or Area Name (conservation site_ID in Biotics or CAID NAME from The Nature Conservancy)

General description (use this as comment field to explain what is being mapped)

Boundary Justification (to get a sense of the accuracy of the data)

Data Sensitivity (SENSITIVE DATA in TNC Conservation Area files)

Sensitive Data Comments (to guide how data can be used and/or distributed)

Relative Importance (of site)

- Natural Heritage Biodiversity Significance Rank
- Other designation/significance comments
- Management Urgency
- Protection Urgency

Habitat and species found in sites:

- Terrestrial ecosystem or vegetation types well represented in site (no standard crosswalk required)
- Freshwater ecosystem or community types well represented in site (no standard crosswalk required)

Species data (occurring on sites):

- Targeted Species data (can be multiple species/guilds/groups) (EO_SITE records from Biotics)

Managed area data:

- Natural Heritage Program's Managed Area records
- Please provide these data only if they indicate relative significance of certain portions of existing managed areas for crucial habitats

Biotics Table	Biotics Field name
CONSERVATION_SITE	conservation_site_id
	conservation_site_ou_uid
	conservation_site_seq_uid
	shape_id
	sitecode_bcd
	lead_resp
	d_state_id
	site_resp_subnation_id
	site_name
	d_site_class_id
	site_alias (from SITE_ALIAS)
	site_relations
	site_desc
	key_enviro_factors
	climate_desc
	land_use_com
	land_use_history
	cultural_features
	directions
boundary_justification	

Biotics Table	Biotics Field name
	d_site_map_id
	site_com
	d_biodiv_significance_id
	biodiv_significance_com
	d_other_value_id
	other_values_com
	d_management_urgency_id
	management_urgency_com
	d_protection_urgency_id
	protection_urgency_com
	protection_com
	conservation_intentions
	exotics_com
	off_site
	info_needs
	mgmt_needs
	managed_area_relations
	additional_topics
	Subnational scientific name
	s_primary_common_name
	version_author_name
	version_date
SOURCE_FEATURE	source_feature_id
	shape_id
	source_feature_descriptor
	source_feature_locator
	d_conc_feature_type_id
	d_loc_uncertainty_type_id
	loc_uncertainty_unit_id
	loc_uncertainty_distance
	d_location_use_class_id
	d_digitizing_base_id
	digitizing_com
	mapping_com
	independent_source_feature_ind

Specific description of information pertaining to crucial habitat type #6.

The following are data types and/or specific database fields found in Biotics (managed by state Natural Heritage programs), additional observation data (not managed within Biotics), and/or the ecoregional databases of The Nature Conservancy.

Element Occurrence or Observations of Target Species:

Targeted Species Occurrence (entire EOR from Biotics)

- Source Feature
- Representation Accuracy
- Last Observed Date
- EO Rank
- Etc.

Targeted Species Observation (Regardless of data management platform. For example, include data managed in extensible tables in Biotics, as well as any observation data managed outside of Biotics)

- Representation Accuracy
- Last Observed Date
- Etc.

Seasonal Use Information

- Normal winter
- Severe winter
- Spring migration
- Fall migration
- Summer
- Fawning/calving
- Comments

Population Importance

- Low
- Med
- High
- Comments

Other Source Data

Biotics Table	Biotics Field name
EO	eo_id
	shape_id
	principal_eo_shape_id
	eo_ou_uid
	eo_seq_uid
	eo_num
	Subnation_code (from ELEMENT_SUBNATIONAL)
	Global scientific_name
	g_primary_common_name
	Subnational scientific_name
	s_primary_common_name
	d_id_confirmed_id

Biotics Table	Biotics Field name
	s_data_sensitive_ind (from ELEMENT_SUBNATIONAL)
	data_sensitive_eo_ind
	data_sensitive_reasons
	d_basic_eo_rank_id
	d_origin_subrank_id
	eo_rank_com
	eo_interpreted_usesa_status
	survey_site_name (from EO_SURVEY_SITE)
	d_est_rep_accuracy_id
	rep_accuracy_com
	eo_specs_version_used
	d_implementation_tier_id
	separation_com
	eo_rep_edited_ind
	eo_rep_edited_com
	d_confidence_extent_id
	additional_inv_needed_ind
	additional_inv_needed_com
	survey_date
	first_obs_date
	last_obs_date
	eo_data
	gen_desc
	monitoring_needs_com
	research_needs_com
	size_of_eo
	condition_of_eo
	landscape_context
	obs_area_acres
	obs_area_hectares
	d_more_land_id
	d_more_management_id
	mgmt_com
	d_more_protection_id
	protection_com
	general_com
	additional_topics
SOURCE_FEATURE	source_feature_id
	shape_id
	source_feature_descriptor
	source_feature_locator
	d_conc_feature_type_id
	d_loc_uncertainty_type_id
	loc_uncertainty_unit_id

Biotics Table	Biotics Field name
	loc_uncertainty_distance
	d_location_use_class_id
	d_digitizing_base_id
	digitizing_com
	mapping_com
	independent_source_feature_ind
OBSERVATION	source_feature_id
	observation_id
	observation_data
	observation_date
	observer

For questions regarding the Biotics Tables, please contact:

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