

Standardized Definitions for Seasonal Wildlife Ranges

FINAL – 1986

Revised July 1990

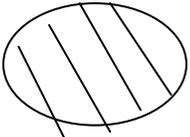
Revised April 2005 Note: WGFD adopted standardized, statewide beginning and ending dates for use of WIN, WYL and SSF seasonal ranges. Those date ranges are listed in italics at the end of the applicable seasonal range definitions in this Appendix.

Revised December 2006 Note: WGFD adopted definitions for Undetermined/Undocumented and Historical Habitat.

Revised November 2015 Note: WGFD adopted standardized statewide definitions for Suspected Migration Corridors, Ungulate Migration Bottleneck, Ungulate Migration Corridor, Ungulate Movement Route and Ungulate Stopover Area.

The term 'documented' is construed as generally referring to recorded observation of animals, however evidence of their use based on such factors as forage utilization and fecal excretion in relation to forage type; forage availability and the spatial relationships of forage to cover among others may also be used to refine seasonal distribution boundaries or to delineate seasonal ranges for transplanted species or herds expanding their range.

BIG GAME/T&E DEFINITIONS

<u>Symbol</u>	<u>Term</u>	<u>Definition</u>
CRU	Crucial 	Crucial range can describe any particular seasonal range or habitat component (often winter or winter/yearlong range in Wyoming) but describes that component which has been documented as the determining factor in a population's ability to maintain itself at a certain level (theoretically at or above the WGFD population objective) over the long term. Example: The total crucial winter range for an elk herd unit should be available, relatively intact and allow a population at the objective to the objective to survive the winter in adequate body condition to maintain average reproductive rates 8 out of 10 years.
CRT	Critical Habitat*	Those areas designated as critical by the Secretary of the Interior or Commerce, for the survival and recovery of listed Threatened and Endangered Species (50 CFR, Parts 17 and 226). Because use of the term has legal implications, its use is limited to only those habitats officially determined as critical by the Secretary.
ESS	Essential Habitat*	Those areas possessing the same characteristics as critical habitat for Threatened and Endangered but not species declared critical habitat by the Secretary of the Interior or Commerce.
HIS	Historical Habitat	Areas or habitats which historically supported a population or portion of a population of animals. These areas may indicate potential reintroduction sites.

OUT	Out	Areas which do not contain enough animals to be important habitat, or habitats of limited importance to a species.
PAR	Parturition Areas (calving areas, fawning areas, lambing grounds)	Documented birthing areas commonly used between 5/15 and 6/30 by the female segment members of a population. These areas may also be used as “nursery areas” by some species.
SMC	Suspected Migration Corridors	Approximate locations the Department has identified where migration movement is known or suspected to occur, but empirical evidence is not available to delineate specific corridor boundaries.
SSF	Summer or Spring – Summer-Fall	A population or portion of a population of animals use the documented habitats within this range annually only (from the previous winter) to the onset of persistent winter conditions (variable, but commonly this period is between 5/1 and 11/30 or shorter in Wyoming). <i>(5/1 – 11/14, adopted by WGF D in 2004).</i>
STA	Staging Area	Documented migration or pre/post-migration concentration areas.
SWR	Severe Winter Relief	A documented survival range which may or may not be considered a crucial range area as defined above. It is used to a great extent; only in occasionally extremely severe winters (e.g., 2 years out of 10). It may lack habitat characteristics which would make it attractive or capable of supporting major portions of the population during normal years but it is used by and allows at least a significant portion of the population to survive the occasional extremely severe winter.
UMB	Ungulate Migration Bottleneck	Any portion of an ungulate migration corridor in which migrating ungulates are physically or behaviorally constrained. Examples may include habitat leading to a highway underpass or overpass, a gap between fences or residential subdivisions or other developments, or a route that circumnavigates a lake or reservoir.
UMC	Ungulate Migration Corridor	An area of the landscape that a substantial portion of the herd or herd segment uses consistently to move between seasonal habitats.
UMR	Ungulate Movement Route	A specific path consistently used by an individual animal to make seasonal movements (e.g., spring and fall) between winter and summer ranges.
USA	Ungulate Stopover Areas	Localized areas consistently used by ungulates to rest and feed during spring and fall migration.

WIN	Winter	A population or portion of a population of animals use the documented suitable habitat within this range annually, in substantial numbers only during the winter (variable, but commonly between 12/1 and 4/30). <i>(11/15 – 4/30, adopted by WGFD in 2004).</i>
WYL	Winter/Yearlong	A population or a portion of a population of animals makes general use of the documented suitable habitat within this range on a year-round basis. But during the winter months (commonly between 12/1 and 4/30), there is a significant influx of additional animals into the area from other season ranges. <i>(11/15 – 4-30, adopted by WGFD in 2004).</i>
YRL	Yearlong	A population or portion of a population of animals makes general use of the suitable documented habitat within the range on a year-round basis. Exception – occasionally, under severe conditions (extremely severe winters, drought) animals may leave the area.
UND	Undetermined/ Undocumented	Areas of habitats, which are expected to or do support a population or portion of a population of animals. The distribution and importance of the area to the population has not been sufficiently documented to designate seasonal range occupancy. The term is applicable to areas where animals have recently been or will be reintroduced; where animals have migrated into and are establishing a population; or where management actions or activities have been implemented which will accommodate a population to expand their range.

* Pertain to threatened and endangered species only.

Department Process for Designating Seasonal Wildlife Ranges and Updating Seasonal Wildlife Range Maps

Department personnel may designate Seasonal Wildlife Ranges using any of the methods detailed below, either individually or in combination:

1. Repeated observations including but not limited to: VHF equipped animals, neck-banded animals, tracks and/or other field observations recorded over multiple years during the appropriate spring/fall/early and late winter time periods and stored in the Department's Wildlife Observation System or other publically accessible data storage system.
2. Historical records available in documents such as Department reports or university theses.
3. Repeated relocations of GPS collared animals. Note, it may be possible to designate ungulate migration corridors using data other than data from GPS collared animals. However, at this time, designating fine scale habitat features such as high-, moderate- or low-use ungulate migration corridor segments and stopover areas is only possible with GPS datasets.*

** A project proponent or other entity has the option to fund a GPS collar study that may be used to further refine the delineated boundaries or location of any seasonal wildlife range. The study design will be submitted to the Department for approval. The Department may propose an adjustment of a seasonal wildlife range based upon data from a statistically robust sample of marked ungulates representative of the herd or herd segment in question from a Department approved study. After completion of the study and submission of the results and all data, the Department will review and approve or deny the proposed revisions using the standard process as described below.*

Department Process for Updating Seasonal Wildlife Range Maps Using GPS Collar Data and Data Other than GPS Collar Data

The definition of seasonal wildlife ranges provides a mechanism to designate or revise them. As the Department has done for decades when, for example, designating ungulate crucial winter ranges, the standard for designating any seasonal wildlife range is robust and must be based on repeated observations of substantial numbers of individual animals and/or groups of animals consistently using or moving through the same area year after year during the appropriate time period. When designating or revising any seasonal wildlife range, the Department will use the same process it has for years as follows:

1. Local Department Regional Biologist(s) will plot data from the Wildlife Observation System, or other similar data storage systems, as well as any supplemental data available in Department reports, university theses and other reports. Any reports and theses used as part of any seasonal wildlife range designation or modification shall be available at the appropriate Department Regional Office(s), Online or at Cheyenne Headquarters.
2. Local Department wildlife managers (i.e. biologists, game wardens) will consult with personnel from federal land management agencies and others as appropriate to determine if data indicate the existence of or the need to revise a seasonal wildlife range and cooperatively delineate draft boundaries.

3. Draft boundaries and supporting data will be provided to the Regional Wildlife Supervisor and Wildlife Management Coordinator for local review and approval.
4. Once Regional Wildlife Supervisor approval is obtained, local Department personnel will make reasonable efforts to communicate with interested parties (landowners, permittees, lease holders, NGOs, etc.) and present recommendations and data for consideration and input before final approval.
5. Once approved at the regional level, recommended changes and supporting data, including the results of local discussions, will be forwarded to the Supervisor of the Statewide Wildlife and Habitat Management Section (SWaHM) in Cheyenne for review, statewide consistency analysis and comment. Comments will be provided to the Deputy Chief of the Wildlife Division with a copy to the proposing region. The SWaHM Cheyenne Biologist will keep the original recommendation, supporting documents and any comments made during SWaHM review as part of the permanent herd unit file.
6. The Deputy Chief will review the regional proposal and any comments provided, work with regional personnel to address comments or revise draft maps as needed then approve or deny the proposed change(s). The Deputy Chief's decision will be provided to the region and the SWaHM Cheyenne Biologist who will store it as part of the permanent herd unit file.
7. If approved by the Deputy Chief, necessary map changes will be made by Cheyenne IT/GIS Staff, made available on the Department website and stored as part of the permanent herd unit file.

Department Process Using GPS Collar Data to Identify High-, Moderate- and Low-Use Ungulate Migration Corridors Segments and Ungulate Stopover Areas

An ungulate migration corridor is considered to be the linear habitat across which the individual migration routes of many animals occur. Currently, the most appropriate means to estimate such corridors is through the use of the Brownian Bridge Movement Model (BBMM; Horne et al. 2007). Given a set of frequent (e.g., every 2 or 3 hours) GPS relocations, the BBMM estimates a utilization distribution (UD) for a sequence of animal locations. Migration sequences for spring or fall migrations of individual animals can most easily be identified by simple visual inspection, as locations between distinct winter and summer ranges, including the 12-hr period prior to and following migration (Sawyer et al. 2009). The "BBMM" package (Nielson et al. 2012) can be used to estimate UD's for individual routes. The UD's from individual animals are then averaged to estimate a population-level migration corridor (Sawyer et al. 2009), a process that is best done for animals that share a common winter range or complex. Assuming a representative sample of animals, the population-level migration corridor reflects both the spatial extent of a migratory population as well as the intensity of use within the migration corridor. When multiple migration routes radiate from a common winter range, as is often the case with mule deer, we can identify where multiple routes overlap and where areas of overlap are more or less heavily used than others. Consequently, within a migration corridor this analysis allows identification of high-, moderate- and low-use ungulate migration corridor segments (Sawyer et al. 2009). This is done by overlaying the 99% contour of each animal's migration route on top of one another and then calculating the proportion of marked animals that used each migration segment within a given area (i.e., 50 x 50 m cells). Ungulate migration corridor segments are usually characterized by the common route segments used by > 20% of the sampled population, moderate-use by 10-20% and low use by <10%. On occasion, exceptions to these percentages are possible with justification and prior approval from the Deputy Chief for highly branched corridors. The justification and approval, if given, will be maintained as part of the permanent herd unit file.

Ungulate Stopover Areas: The BBMM approach can also be used to identify corridor segments used as stopover areas (i.e., foraging and resting habitat) and to distinguish them from those used primarily for movement. Stopovers are important to migratory mule deer and other ungulates because they allow animals to maximize energy intake by migrating in concert with plant phenology (Sawyer and Kauffman 2011). Stopover areas are easily identified from a population-level migration corridor as the top 10% of UD values. Stopover polygons less than 5 acres in size can be excluded.

Currently, the BBMM is the most appropriate method for estimating ungulate migration corridor segments, i.e. the high-moderate- and low-use segments of a corridor as well as stopover areas. Scientific methods are improving rapidly, however, and new methods may emerge that are more appropriate for identifying corridor segments and stopover areas. As these new methods are developed the Department will review them and adjust as appropriate.

Approval process: The approval process for proposals using GPS data to designate fine scale corridor segments will be the same as that for other types of data as detailed above.

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