

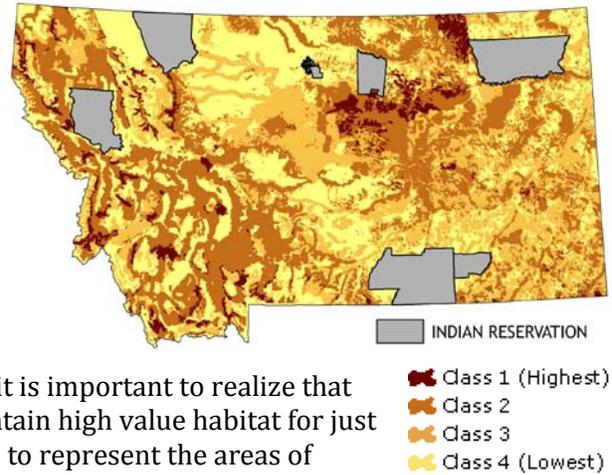


# Montana Fish, Wildlife & Parks Crucial Areas Assessment



## TERRESTRIAL GAME QUALITY

**SUMMARY:** This layer depicts the relative value of areas based upon the specific habitat requirements of 12 native game species. These species were categorized into 4 functional groups: big game, bighorn sheep and mountain goat, prairie grouse, and forest carnivores. Area values were calculated by adding together the individual contribution of each species group, meaning that in areas of overlap values will generally be higher. However, it is important to realize that an area with a lower cumulative value can still contain high value habitat for just one species group. These 12 species were selected to represent the areas of highest value for native game in Montana, all other native game species are represented in the Terrestrial Species Richness layer.



**MEASUREMENT UNIT:** Public land survey sections - approximately one square mile.

**MAPPING CONSIDERATIONS:** Indian reservations were not evaluated due to lack of data. National park lands are not currently represented in big game distribution layers and therefore have lower than expected values in some areas.

### DATA SOURCE(S) / QUALITY:

**Big Game:** *Metric evaluated:* winter range habitat value. *Species:* pronghorn antelope, elk, moose, mule deer and white-tailed deer. *Data layers:* big game distribution - publicly available for individual species, maintained by FWP. Layers are updated using expert knowledge, including known habitat associations and extrapolation from survey data. Resolution is based on 1 square mile public land survey sections; Montana Land Cover Classification -layer maintained by the Montana Natural Heritage Program (NHP) Spatial Analysis Lab, University of Montana. Classification based on remote sensing. Resolution is 30 meters. **Bighorn sheep and mountain goat:** *Metric evaluated:* general and winter distribution. *Data layer:* big game distribution – see previous. **Forest carnivores:** *Metric evaluated:* habitat suitability. *Species:* wolverine, fisher, marten. *Data layers:* furbearer harvest locations – maintained by FWP Mandatory Reporting System. Reporting at section level by trappers; Furbearer observation records – Maintained in NHP Point Observation Database. Accuracy verified by NHP staff; Wolverine primary habitat model – produced by the Wildlife Conservation Society; Fisher and marten habitat suitability model developed using known locations and reviewed by FWP biologists. Resolution is 90 meters.

DATA SOURCES	
✓	Survey data – counts or estimates
✓	Survey data – categorical (e.g. presence/absence)
✓	Expert opinion based on observation
DATA EXTRAPOLATION TECHNIQUE USED	
●	None
✓	Modeling of habitat-species associations (deductive)
✓	Statistical modeling (inductive)
●	Extrapolation to habitat unit (e.g. stream section)
✓	Extrapolation based on expert opinion

**Prairie grouse:** *Metric evaluated:* core habitat areas, lek areas, and habitat suitability. *Species:* sage-grouse, sharp-tail grouse. *Data layers:* sage-grouse and sharp-tail grouse lek locations and



# Montana Fish, Wildlife & Parks



## Crucial Areas Assessment

observations collected via ground and aerial surveys by FWP and Bureau of Land Management biologists – maintained in FWP sage-grouse database; Sage-grouse core areas – developed and maintained by FWP with input from Bureau of Land Management. Publicly available layer based expert knowledge review of sage-grouse habitat suitability model using lek locations and limited to areas of highest male density. Sharp-tail grouse habitat suitability model developed using lek locations and reviewed by FWP biologists. Resolution is 90 meters.

**METHODS: Big game** values were determined based upon the presence winter range habitat. The score assigned to particular areas varied by FWP Region (R#). In the Western mountains, areas identified as winter use areas in the species distribution layers received one point. In the Northwest (R1) winter use of Elk or White-tail Deer was given an additional point. In the Southwest (R2-3), Elk or Mule Deer was given an additional point. For the rest of the state, areas identified as winter use areas in the species distribution layers, as well as areas containing >50% sagebrush grassland, received one point. Areas identified as winter use for more than one species, or containing >75% sagebrush grassland were given an additional point. **Bighorn sheep and mountain goat** received 1 point for overall distribution and 2 points for winter use. In areas of species overlap, values were not cumulative, the highest value was chosen. **Forest carnivore** habitat values were 2 points for wolverine habitat; 2 points to highly suitable marten or fisher habitat; and 1 point to moderately suitable marten or fisher habitat. In areas of species overlap, values were cumulative to a maximum value of 6 points. Values were only calculated in western forest habitats where forest carnivores were expected. **Prairie grouse** habitat was valued by assigning 3 points to sage-grouse core areas and outside of core areas, 2 points were assigned to sage-grouse lek areas. Two points were assigned to highly suitable sharp-tail grouse habitat and 1 point to moderately suitable sharp-tail grouse habitat. In areas of species overlap, values were cumulative to a maximum value of 5 points. Values were only calculated in prairie areas where prairie grouse were expected. **Overall:** Within each species group, values were rescaled by dividing by the maximum number of points to give each category a value ranging from 0 to 1. In this way each group received equal weight. Big game winter habitat was given twice the weight in the final calculation based upon its level of importance. The final summed value was again rescaled to 0 to 1, by dividing by the total possible score for that section. For example, in eastern prairie areas the total possible score did not include forest carnivores.

**FINAL CATEGORIZATION:** The resulting scores ranged from 0 to 1. The mean (0.37) and the standard deviation (0.23 SD) of the final scores were calculated. Final categories were determined by assessing the deviation from the mean value. The highest category had values > 1.5 SD from the mean. The high category was 0.5 to 1.5 SD from the mean value. The moderate category ranged from -0.5 SD below the mean to 0.5 SD above the mean. The low category was < -0.5 SD from the mean. Actual values and percentage of land area are shown in the table.

CLASS	RANGE OF VALUES	PERCENT OF STATE
1 (Highest)	> 0.71	4.3 %
2	0.48 - 0.71	33.0 %
3	0.26 - 0.48	29.7 %
4 (Lowest)	< 0.26	33.0 %

**CONTACT:** Adam Messer, FWP – Data Services Section; 406.444.0095; [amesser@mt.gov](mailto:amesser@mt.gov)

**DATE MODIFIED:** April 9, 2010 – V 1.0