

INTERAGENCY GRIZZLY BEAR COMMITTEE TASKFORCE REPORT



Grizzly Bear/Motorized Access Management

July 1994

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BACKGROUND

History has demonstrated that grizzly bear populations and many of our large carnivores survived where frequencies of contact with humans were very low (Storer and Tevis 1955, Brown 1985, Servheen 1989). Populations of grizzly bears and other large carnivores persisted in those areas where large expanses of relatively secure habitat were retained and where human induced mortality was low. In the lower 48 conterminous states, this is primarily associated with National Parks, Wilderness areas and large blocks of public lands.

The importance of managing motorized access, one of the most influential parameters affecting habitat security, has been emphasized for many species of wildlife in the Northern Rockies. Most notably for grizzly bears (Mace and Jonkel 1980, USFWS 1993, Mattson et. al. 1987) and for elk (Hillis et. al. 1991, Christensen et. al. 1993). By managing motorized access on the landscape, the following grizzly bear management objectives can be met:

- Minimize human interaction and potential grizzly bear mortality
- Minimize displacement from important habitats
- Minimize habituation to humans
- Provide relatively secure habitat where energetic requirements can be met.

Historically, management of motorized use has been primarily accomplished through restriction of certain types of motorized use on established access routes. Restrictions on vehicle use through timing and type of vehicle have been commonplace. Evaluation of the effects of motorized access have been based primarily on the density of open roads.

Recent research has indicated that evaluation of open road density alone is not a complete measure of the effects of motorized access on use of habitat by grizzly bears (Mace & Manley 1993). In addition to open road density, total motorized access route density along with the presence of core areas, are important elements in the management of human access within grizzly bear recovery zones. Core areas are free of motorized traffic and high levels of human use.

The management of human use levels through access route management is one of the most powerful tools available to balance the needs of grizzly bears and many species of wildlife with the needs and activities of humans. It has been documented in several research projects, both completed and ongoing, that unregulated human access and development within grizzly bear habitat can contribute to increased bear mortality and affect bear use of existing habitat. It is also documented that human use of grizzly bear habitat within many of our recovery zones continues to increase.

IGBC ACCESS TASKFORCE

At the request of the Interagency Grizzly Bear Committee (IGBC), this taskforce was created to evaluate current state and federal procedures for evaluating the effects of motorized access on grizzly bears within grizzly bear recovery zones. To accomplish this task, numerous documents were reviewed for consistency in methodology including USDA-Forest Service biological evaluations, USDI-Fish and Wildlife Service (USFWS) biological opinions, and Land and Resource Management Plans and Research reports. Upon completion of this review, it was readily apparent that consistent methods of analyzing and displaying the effects of human access on the quality, quantity, and distribution of habitat were lacking. The taskforce was requested to 1) establish standardized definitions for roads, i.e., open road, reclaimed road, etc., 2) standardize methods to measure road densities and define the analysis areas within which density should be measured, and 3) assure that developed definitions and procedures interface with the existing unified cumulative effects model. These actions were necessary to provide consistency in the evaluation of access effects on public lands.

While the following definitions and procedures have been developed primarily for use in displaying effects of human access routes on grizzly bear habitat, the concepts are applicable for evaluating the effects on many other species of wildlife. Their use on private lands is encouraged.



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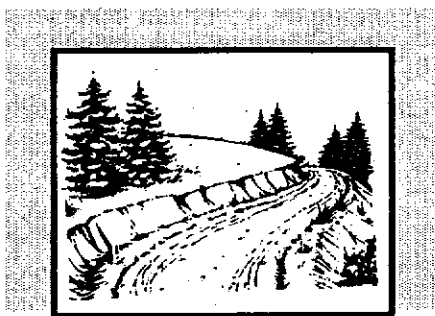
DEFINITIONS

During early review of definitions proposed by the taskforce, concerns were raised that many of the terms have already been defined locally and/or nationally, and to change the definitions of these terms would create confusion, misuse of terms, etc. After polling all the major land managers, it was apparent that consistency between land management and regulatory agencies was largely absent and that confusion, misuse of terms, etc., already existed.

It was the IGBC's intent to establish definitions and procedures that would allow for consistency among the various land management units in describing effects of human access routes on grizzly bear habitat use. This required defining access terms commonly used in biological analyses. The following definitions are recommended and are felt to cover all the various access route scenarios found within the recovery zones.

ROAD—all created or evolved routes that are > 500 feet long (minimum inventory standard for the Forest Service Route Management System), which are reasonably and prudently driveable with a conventional passenger car or pickup.

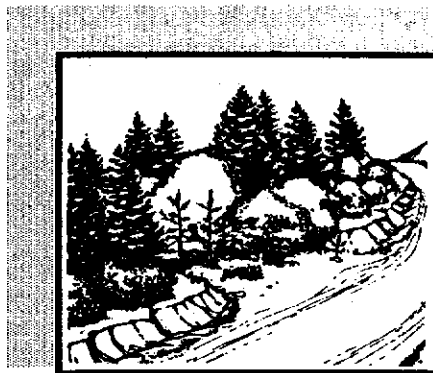
OPEN ROAD—A road without restriction on motorized vehicle use.



RESTRICTED ROAD—A road on which motorized vehicle use is restricted seasonally or yearlong. The road requires physical obstruction (generally gated) and motorized vehicle use is legally restricted.*



RECLAIMED/OBLITERATED ROAD—A road which has been treated in such a manner so as to no longer function as a road or trail. This can be accomplished through one or a combination of several means including: recontouring to original slope, placement of logging road, or forest debris, planting of shrubs or trees, etc.



The use of the term "Closed, has been improperly applied for years to what are actually 'Restricted' roads. A "Closed" route or area is closed to all types of traffic including foot traffic and its use in describing roads is to be discouraged.

TRAIL—all created or evolved access routes that do not qualify as a "road". They are not reasonably and prudently driveable with a conventional passenger car or pickup.

OPEN MOTORIZED TRAIL—A trail without restriction on motorized use and is used by motorized vehicles. Trails used by 4-wheelers, 4-wheel drive vehicles and motorized trail bikes are examples of this type of access route.

RESTRICTED MOTORIZED TRAIL—a trail on which motorized use is restricted seasonally or yearlong. Motorized use is legally restricted.*

* Motorized administrative use by personnel of resource management agencies is acceptable at low intensity levels as defined in existing cumulative effects analysis models. This includes contractors and permittees in addition to agency employees.

METHODOLOGY/PROCEDURES

This section is intended to provide a structured and consistent approach to the analysis and documentation of effects of motorized access on grizzly bear habitat. The goal is to improve efficiency and consistency of effects analyses and provide quality information needed for land stewardship. Its use should be applicable to many other species and its application should be encouraged in those instances.

The recommended procedure for evaluating motorized access effects on grizzly bear habitat is as follows:

1) Delineate the Analysis Area(s):

Analysis areas that approximate the size of annual home ranges of an adult female grizzly bear should be delineated and used for effects analysis. The entire recovery zone should be delineated in this manner. These areas will generally be the existing Bear Management Units or Subunits. They are not intended to be the actual home ranges of known adult female grizzly bears. Since analysis areas are intended to approximate home range sized areas, delineation should account for elevational and seasonal distribution of habitats when this information is available.

For example the Flathead National Forest has delineated analysis areas across the Forest. In areas similar to the South Fork of the Flathead grizzly bear study area, analysis areas of approximately 48 sq. mi. in size were delineated in order to represent the average home range reported by Mace and Manley 1993, for 9 adult female grizzly bears. For the drier habitat types where there also seems to be a lower bear density, the decision was made to utilize units approximately twice as large. Habitats and use patterns of grizzly bears on the Flathead are elevationally distributed with elevational zones having varying levels of importance by season. This required that all elevational zones be represented in analysis areas. The Forest delineated analysis areas that attempted to include 3rd and/or 4th order watershed areas, and included the drainage bottom to the hydrologic divide of the major river drainage involved.

2) Development of Access Route Density Maps:

Utilizing the definitions found in this report, create a mylar manuscript (1:24,000) of linear features for each of the grizzly bear seasonal-use periods (spring, summer and fall when this level of information is available) of all open and restricted roads and trails. Each individual linear feature would be categorized as an open road, restricted road, open motorized trail or restricted motorized trail for each of the three seasons (see Definitions Section) and assigned a unique attribute on the base map (e.g., open road = 1, restricted road = 2, open motorized trail = 3, restricted motorized trail = 4).

The seasonal manuscripts of linear routes are digitized and then converted to raster maps using a Geographic Information System (GIS). Density maps are then created (mi/mi²) using a moving window, GIS routine (Turner and Gardner 1990) which displays the spatial distribution of road density. A moving window of 1 square mile will be used. For accurate calculation of densities, it is necessary to include all the roads and trails within 1.0 mile of the outer boundary of the analysis area. It is important that the same GIS software be used when performing comparative analysis of the outputs, as significant differences can occur between software packages.

For each season, density maps will be produced. These are:

1. open road density
2. restricted road density
3. open motorized trail density
4. restricted motorized trail density
5. total motorized access route density(1+2+3+4)
6. open road and open motorized trail route density (1 + 3)

These 6 density base maps will be composed of "raw" density values. The exact composition of these raw values will depend on software used. The 6 density maps will next be categorized into density categories defined by the respective recovery zone subcommittees. Examples of

categories currently being utilized on the Flathead National Forest are as follows:

1. zero miles/mi²
2. 0.1 to 1.0 miles/mi²
3. 1.1 to 2.0 miles/mi²
4. > 2 miles/mi²

As all agencies do not have geographic information systems in place, interim direction is to use existing procedures until GIS technology is acquired. It is recommended that implementation of these procedures occur by the spring of 1995.

3) Identify Existing/Potential Core Areas:

Researchers and managers throughout the recovery zones agree that core areas, areas free of motorized access during the non-denning period, are an important component of the habitat of adult females that have successfully reared and weaned offspring. Within the analysis area, identify existing/potential areas that meet the following criteria for each season of use:

Core Area(s) Criteria:

1. No motorized use of roads and trails during the non-denning period. Within the core area, restricted roads require closure devices that are permanent such as tank traps, large boulders, dense vegetation, etc.
2. No roads or trails that receive non-motorized, high intensity use as defined in established cumulative effects activity definitions.
3. Minimum of .3 miles from any open road or motorized trail. This will be accomplished by buffering all open roads and open motorized trails. Studies regarding the influence of roads on grizzly bear habitat use have provided a range of distances wherein bears appear to show avoidance. Mattson et. al. (1987) found that grizzly bears in Yellowstone National Park tended to avoid habitat within 500 M (.31 miles) of roads during spring and summer. Research in southeastern British Columbia found that grizzly bears used the area within 100 M (.06 miles) of roads less than expected on the basis of availability

(McLellan and Shackleton 1988). Aune and Kasworm (1989) reported less than expected use of habitat within 200 M (.12 miles) of roads during spring, 100 M (.06 miles) during summer and 400 M (.25 miles) during autumn on the East Front study area of north central Montana. A study of road influences on grizzly bears in the Cabinet Mountains of northwest Montana indicated less than expected use within 914 M (.57 miles) of roads with no significant seasonal variation (Kasworm and Manley 1990). Given this range in the zones of less than expected use (100 - 914 M), the distance of .3 miles was recommended.

4. Consideration should be given, when information is available to do so, to ensure that the core area(s) meet seasonal bear habitat needs by assuring that spring, summer, fall and denning habitat within the core areas are representative of these seasonal habitats in the entire analysis area.

5. Once core areas become established and effective, these areas should remain in place for at least 10 years. This duration is based upon the generation time for a female grizzly bear or the time it takes a female grizzly bear to replace herself.



4) Define Acceptable Level(s) of Motorized Access:

The IGBC requested that the individual grizzly bear management subcommittees define and recommend the habitat conditions that should be maintained to provide habitat security for the grizzly bear.

Habitat security conditions cannot be defined entirely by motorized access route density. Other factors such as vegetation (food, cover), concentrated human use locations (e.g., town sites, campgrounds), heavily used non-motorized trails and areas of high levels of dispersed human use will also influence the effectiveness of area in regards to habitat security. However, motorized access routes and the human use associated with these routes are one of the most easily defined and measurable factors that we can evaluate. Motorized access is also one of the more influential parameters affecting habitat security.

The following parameters are recommended to be included as part of analyses regarding motorized access and its effect on habitat security for grizzly bears:

TOTAL MOTORIZED ACCESS ROUTE DENSITY - Includes all open and restricted roads and motorized trails. Density is displayed as a percentage of the analysis area in a defined density category. Example 20% >2.0 miles per sq. mile

OPEN ROAD AND OPEN MOTORIZED TRAIL ROUTE DENSITY - Includes all open roads and open motorized trails. Density is displayed as a percentage of the analysis area in a defined density category. Density is a single cumulative total of open roads and open motorized trails.

PERCENTAGE OF ANALYSIS AREA IN CORE AREA(S) - Percentage of the analysis area that meets core area criteria. Minimum size and connectivity of patches will be established at the recovery zone level. It is recommended that the minimum size for the core area(s) be that area necessary to support a female grizzly bear for 24 hours of foraging.

Based on the best available information, each of the individual IGBC recovery zone subcommittees will display for known adult female grizzly bears the above listed parameters. This data will be obtained utilizing the largest individual annual home ranges of adult females. With this biological information, along with other research results and with social and other land management considerations, the individual subcommittees would recommend the level(s) at which parameters should be managed. It is recommended that this occur by the spring of 1995.

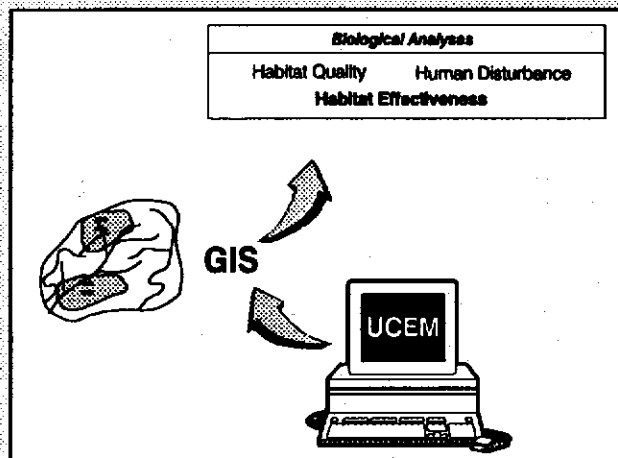


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CUMULATIVE EFFECTS INTERFACE

The IGBC requested that definitions and procedures recommended by this taskforce interface with the existing Unified Cumulative Effects Model (UCEM). There have been concerns raised that the above procedures would replace cumulative effects analyses procedures currently approved and in place. This is not the case. The current version of the UCEM provides for the preparation of GIS based maps and numeric outputs of the parameters recommended for inclusion in effects analysis.

One of the basic outputs of the UCEM model and the most often referenced is habitat effectiveness. This output reflects the area's ability to support bears given the quality of habitat and the cumulative human disturbances imposed upon the area. This output will still be important to biologists and managers in the preparation of biological analyses. The recommendation that additional parameters be measured will allow managers to take a more refined look at how motorized activities are affecting grizzly bear habitat.



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Christopher Servheen, Grizzly Bear Recovery Coordinator, USDI-Fish and Wildlife Service

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