Horizontal Cover – Interim Guidance for Assessing Multi-storied Stands Within Lynx Habitat

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A. Background Information and Purpose and Need

Dense horizontal cover is an important determinant of snowshoe hare presence and abundance within lynx habitat. This cover may occur in both young structure and multi-storied stands with the later being more important to lynx during the winter period. Assessment of this cover element at the project level is important in determining whether these areas are likely to provide important foraging habitat for lynx. The objective is to determine whether multi-storied stands provide winter snowshoe hare cover above a threshold value (discussed below). If the threshold value is met or exceeded then the stands are subject to the provisions of Standard VEG S6 in the *Northern Rockies Lynx Management Direction Record of Decision (USFS 2007)* hereafter referred to as the NRLMD. The following attached paper discusses clarification of Standard VEG S6 and the application of this standard to ***winter snowshoe hare habitat***. Click on the hyperlink to view the paper:

Std VEG S6 clarification 2008-05-16 copy.doc

One goal of ongoing lynx research is to evaluate whether lynx habitat data can be correlated with other vegetation mapping efforts such as V-map. If there are correlations with any of these data sets it may provide an assessment of horizontal cover without the need to field evaluate all multi-storied stands within mapped lynx habitat. However, this evaluation will not likely be completed before 2010. ***In the interim***, the following method for conducting an assessment of horizontal cover within lynx habitat provides a means to determine whether vegetation standard VEG S6 in the NRLMD is applicable to specific stands within a project area.

B. Interim Methodology

1) Delineate multi-storied stands within mapped lynx habitat.
2) Threshold horizontal cover value:
   a) Winter: greater than or equal to 35% of measured horizontal cover
   b) Summer: greater than or equal to 48% of measured horizontal cover

   These values correspond to the lower "hinge" horizontal cover values as reported by John Squires, RMRS (hyperlink to pdf under No. 4 below).

3) Timing of measuring winter snowshoe hare horizontal cover

   a) Winter - It is best to evaluate winter snowshoe hare horizontal cover during the winter period when average mid-winter snow depth occurs. If winter assessments are conducted then the threshold value to use as discussed above under No. 2 is 35%.

b) Summer – If it is not possible to sample stands during the winter then an alternative is to sample stands during the summer period. In this case the threshold value to use as discussed above under No. 2 is 48%.

4) Stratify stands to be sampled – Stands that clearly (a) fall below the threshold value and (b) those that are clearly above the threshold value do not need to be sampled. Photo documentation of stands that fall into either category (a) or (b) is advisable. (See photo documentation under No. 8.) If there is a question as to whether a stand meets the threshold criteria or not then that stand should be sampled. The attached series of 6 photos provide examples to use as a guide in making this determination. Click on the hyperlink to view the photos:

Measuring Horiz Cover pics_2008-06-03\Lynx_HC_Pict_01.jpg

Measuring Horiz Cover pics_2008-06-03\Lynx_HC_Pict_02.jpg

Measuring Horiz Cover pics_2008-06-03\Lynx_HC_Pict_03.jpg

Measuring Horiz Cover pics_2008-06-03\Lynx_HC_Pict_04.jpg

Measuring Horiz Cover pics_2008-06-03\Lynx_HC_Pict_05.jpg

Measuring Horiz Cover pics_2008-06-03\Lynx_HC_Pict_06.jpg

5) Sampling methodology – Use the methodology developed by John Squires of the Rocky Mountain Research Station in Missoula, Montana. The attached document provides details of that methodology. Record and summarize data as described in this methodology. Click on the hyperlink to view the methodology:

Measuring Horiz Cover_2008-06-03.pdf

6) Randomize plot locations. Plots need to be randomly located to minimize as much bias as possible.

7) Plot sampling intensity – It is difficult to provide a specific formula for determining an adequate number of horizontal cover plots in a given stand across lynx habitat in the Northern Rockies. Plot number will vary depending upon the uniformity of each stand. An 80% confidence level is desirable to provide a fairly high certainty that the recorded cover values are truly representative of the stand. However, sampling at this level may require a large number of plots and because funding, personnel and time are limiting it may not be possible to sample at this level. The following is an objective, unbiased method that can be used:

a) After initial stratification, sample horizontal cover on 20% of the acres to be assessed at the rate of one plot per 10 acres.

Example: The project area has 5,000 acres of mapped lynx habitat that are classified as multi-storied. Screening of these acres indicates that 4,000 acres either clearly meet or do not meet the 35% winter horizontal cover (or 48% summer horizontal cover) threshold value and therefore horizontal cover measurements are deemed not necessary on those acres. The remaining 1,000 acres of multistoried stands need to be assessed, therefore:

1,000 ac x 0.20/10 = 20 horizontal cover plot measurements needed

b) Each plot needs to be randomly located. Use GPS units to locate these plot centers in the field.

c) Each stand sampled should have at least two plots

d) The number of plots should be increased if the stand is highly variable.

8) Record digital photographs at each plot. Take photos according to the following methodology:

a) Use a digital camera set at the widest focal length and record this value. (Note: Most point and shoot digital cameras have a wide angle setting of 35-38 mm although some may be as wide as 28 mm. The widest setting is preferred.)

b) Record photos from the plot center in each of the same four cardinal directions where horizontal cover is estimated from the cover boards. Check the photos after each exposure to ensure the photos are properly exposed.

c) Record all pertinent data for each photo including:

i. Project name
ii. Recorder(s)
iii. Date
iv. Location
v. Elevation
vi. Cardinal direction of photograph
vii. Other (Weather condition that may affect the photograph)

d) Download and back-up copies of photos upon return to the office. These photos will provide supportive documentation for the evaluation of horizontal cover in the project record. Other knowledgeable people can also review them if there is any uncertainty about whether the photos are representative of dense horizontal cover.

9) Record and summarize data for each plot and collectively for all plots taken within each stand sampled and record information for these plots as described under section 8.c) above. Include photos taken for each respective plot and provide a copy of all the information and summaries in the project file.

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