Ground –Based Radiometers, Real-time Gps Receivers, and Laser Rangefinders—New Techniques for Estimating Vegetation Parameters and Animal Use Sites[TWS]

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Wildlife personnel have long desired methods to estimate live herbaceous biomass and utilization at a fine scale over large areas. New techniques incorporating ground-based radiometers and satellite imagery may provide methods for estimating biomass at different times during the growing season, thereby allowing utilization to be estimated by differences between estimates. Although these techniques are very promising, they are not without limitations. Preliminary results for biomass estimation in the Hayden Valley of Yellowstone National Park, the Sun River Game Range, and a portion of the Missouri Breaks area will be presented along with some of the limitations of this technique. The non-destructive methods of biomass estimation with ground-based radiometers are particularly suited for monitoring selected locations over time as long as they can be

precisely located. Real-time GPS can provide a far more accurate way to relocate monitoring sites than the averaging mode of commercially available GPS receivers or military PLGR's. Initial results indicate real-time GPS can relocate positions within 1m, making the combination of ground-based radiometers and real-time GPS ideal for monitoring temporal change. Although remote sensing techniques and real-time GPS can greatly increase our ability to accurately assess vegetation parameters, analysis of animal use sites is only as good as the positional accuracy of animal locations. A laser rangefinder and digital compass interfaced with a GPS receiver can provide positional accuracy of animal use sites consistent with the accuracy of sampling data. Although an accuracy assessment has not been completed, preliminary results indicate locations obtained at a distance in excess of 500 m with a laser rangefinder to be within 1m of the true location. In addition to providing more accurate locations for analysis, animal locations obtained with a laser rangefinder can subsequently be revisited using a real-time GPS receiver.