

Designing a Sampling System for Concurrently Measuring Outdoor Recreation Visitation and Describing Visitor Characteristics

Donald B. K. English¹, Stanley J. Zarnoch² and Susan M. Kocis³

¹ U.S.D.A. Forest Service, Southern Forest Experiment Station, Athens, GA, USA
e-mail: denglish@fs.fed.us

² U.S.D.A. Forest Service, Southern Forest Experiment Station, Asheville, NC, USA

³ U.S.D.A. Forest Service, Region 5, Six Rivers National Forest, Bridgeville, CA, USA

Two primary information needs for managing recreation areas and the visitors to those areas are: (1) good estimates of visitation volume, and (2) accurate descriptions of visitor characteristics, such as length of stay, frequency of visit, and primary activity. Typically, the sampling approaches of studies for these two information needs are not congruent. For National Forests with large undeveloped areas, efficient sampling for the two types of information may be to a large extent incompatible. Sampling plans that address visitation volume issues allocate most of the sample days to the largest and most internally variable strata. Sampling plans for studies of visitor characteristics allocate sampling effort to locations that most efficiently provide visitor information, such as at developed sites. Additionally, sampling plans for studies of visitor characteristics may need to ensure spatial or temporal dispersion of the sample, in order to ensure adequate representation of different visitor sub-groups. Unfortunately, most managing agencies are unlikely to have funding for two separate data collection efforts. This paper demonstrates a method for allocating days into sampling strata which balances the contribution of sample days in improving the accuracy of the total visitation estimate with the contribution of the sample day to maximizing the quantity and dispersion of visitor information. The resulting sampling allocation provides an optimal solution to the attempt to address both of the information needs through a single data collection effort. A second phase of the method addresses how to ensure spatial and temporal dispersion of sampling effort. Examples of applications on National Forests in the United States are provided.

Key Words: National Visitor Use Monitoring, onsite sampling, sampling plan, use estimation, visitor characteristics, sample allocation