Determination on the Optimal Sample Size in the Aquatic Insect Community Analysis - Pangtae Creek Model.

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A model study was conducted in a stream reach of the Pangtae Creek, Kangwon-do in October 1995 and May 1996 to determine the optimal sample size for the analysis of the aquatic insect community. The results showed that the required minimum sample size varied and depended on the purposes of the community analysis. According to the Species:Area Curve method, at least 16 Surber samplings(30 × 30 cm) were required in a stream reach at each spring and fall survey. The species diversity index did not vary significantly as the sample size increased. Based on the coefficient of variation analysis, the minimum sample sizes of 10 were required to compare the seasonal differences of the community in the study area. Considering the static community structure of aquatic insects, which is based on both species numbers and individual numbers, 11 and 7 samplings were optimal sizes for the fall and spring survey, respectively. Our model showed that the optimal sample size should be determined by interactions between minimum sample size depending on the purposes of the community analysis, the degree of data reliability, and cost efficiency. As a conclusion, we recommend that 12 Surber samplings from 3 riffle-pool sequences (4 samplings at each riffle-pool sequence) are required in a stream reach to obtain reliable as well as cost efficient data.