



Analyzing Length or Size Biased Environmental Data

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Conventional statistical data analysis techniques largely depend on assumptions like randomness, normality, independence and similarity of the data. But in reality we often observe that these assumptions do not hold. Among them the randomness is considered as the most important one because if the data are not random the entire inferential procedure breaks down. Faulty sampling technique is mostly responsible for nonrandom samples but in environmental studies often we observe data no matter how carefully we design the sampling technique the data become biased either in length or size. Normality is another very important issue in statistical inference because all conventional sampling distributions and test statistics heavily rely on normality of the data. If we knew the appropriate distribution of the data we can analyze those in different ways, but we often observe data which may not match with the well-known distributions and nonparametric statistics is the only alternative there. In this paper we develop a procedure of analyzing data sets which are length or size biased. For this type of data we have developed a biased correction technique first and then apply bootstrap method on corrected data for the inferential purpose. We present a very interesting example in this paper which clearly shows the merit of employing our proposed procedure in analyzing this type of data.

Keywords: Transect sampling; outlier; weighted distributions; robust statistics; bootstrap.