

**Using SHEBI (SHE analysis for biozone identification): To proceed from the top down or the bottom up? A discussion using two Miocene foraminiferal successions from Trinidad,**

**West Indies**

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**ABSTRACT**

SHE analysis for biozone identification (SHEBI) is a new technique that identifies abundance biozones (ABs) by accumulating species abundance data along a time series, recalculating species richness (S), the information function (H), and the equitability index (E) with the addition of each sample. Boundaries are drawn between ABs where SHE analysis detects a change in either (1) the population structure or (2) the assemblage's species composition, species having joined or left the community in quantities that affect the evenness of the distribution of species abundances. This study uses foraminiferal data from two Miocene sections on Trinidad (Ciperó Formation, *Catapsydrax stainforthi* Zone; San José Calcareous Silt, *Globorotalia acostaensis* Zone) to test if top-downward or bottom-upward analyses indicate the same AB boundaries. The results differ. In the Ciperó there are no matches between AB boundaries determined by bottom-up and top-down SHEBIs. In the San José Calcareous Silt, only some boundaries match. It is recommended that SHEBI proceed in the order in which the samples in the ABs were deposited, treating the ABs as successive ecostratigraphic units. Intriguingly, no matter whether ABs were determined by bottom-up and top-down SHEBIs, SHE community structure investigations indicated logarithmic series population structures. A graphical technique for determining the species responsible for the change in ABs reveals that a peak in the per sample percentage abundance of *Nuttallides umbonifera* in the Ciperó Formation is offset by one sample from the AB boundaries it engendered, marking a temporary decrease in nutrient flux.