

**A BIOSTATISTICAL APPROACH TO SPECIES IDENTIFICATION OF MONOTAXONOMIC
CLUSTERS FROM THE EDIACARAN**

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ABSTRACT – Biostatistical analysis when applied to organisms lacking diagnostic features such as *Nemiana* from Namibia in southwest Africa, the Bernashivka, Karachiyivtsi, and Podolia regions in the Ukraine; and *Beltanelloides* accumulations from the Arkhangelsk region in Russia provides a refined method for distinguishing different species of spheroidal pods that form single layered monotaxonomic communities or fossil beds. These high density assemblages form multiple overlapping hexagonal ‘clusters’ with each pod defining a cluster centre while surrounding adjacent pods form the cluster perimeter to create a two dimensional grid which fixes pod dispersal throughout the community. Applying the non-parametric Kruskal-Wallis biostatistical test on ranked standard deviations of cluster perimeter pod radii, and cluster lengths from the centre of the central pod to the centre of each perimeter pod identified significant sample variability. Identifying which samples had significantly different growth characteristics based on radii and length variability was obtained using the Tukey biostatistical test which established that *Nemiana* from the southwest of Namibia represent different species to Ukrainian *Nemiana simplex*. Analysis of growth characteristics based on a relationship between pod radii and length between *Nemiana* and *Beltanelloides* was inconclusive which may be a reflection of different sample sizes or low sample data point – pod numbers.