Variations in Vegetation Structure, Species Dominance and Plant Communities in South of the Eastern Desert-Egypt

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Abstract:

For two successive years (2011 and 2012), the floristic diversity and vegetation composition in the southern part of the Eastern Desert were investigated through four transects (3 crossing the Eastern Desert and one along the Red Sea). The data collected from 142 stands covering the study area included the species composition, functional groups, chorology and occurrences (Q-values). A total of 94 plant species belonging to 33 different families were recorded, with Asteraceae, Zygophyllaceae, Fabaceae, Poaceae, Chenopodiaceae and Brassicaceae as the largest families. Shrubs represented the largest functional group (39.4%), while perennial herbs represented the smallest ones (12.8%). Species occurrence (Q-value) revealed that Zilla spinosa, Acacia tortilis subsp. raddiana, Morettia philaeana, Caroxylon imbricatum, Zygophyllum coccineum and Citrullus colocynthis had wide ecological range of distribution (dominant species, Q-values ≥ 0.2). Saharo-Arabian chorotype was highly represented (72.6 %) in the flora of this area, eventually as mono, bi or pluriregional. Classification of the data set yielded 7 vegetation groups included: (A) Zilla spinosa-Morettia philaeana, (B1) Zilla spinosa-Citrullus colocynthis-Morettia philaeana, (B2) Zilla spinosa, (C1) Zygophyllum album-Tamarix nilotica, (C2) Zygophyllum coccineum-Tamarix nilotica, (D1) Zilla spinosa-Zygophyllum coccineum and (D2) Zilla spinosa-Acacia tortilis subsp. raddiana-Tamarix aphylla-Balanites aegyptiaca. Certain vegetation groups were assigned to one or more transects. Detrended Correspondence Analysis (DCA) revealed that electrical conductivity, sodium, potassium, calcium, magnesium, chlorides, moisture content, sulphates, pH, organic matter and gravel were the soil variables that affect the species distribution in this study.

Keywords:

arid environment, chorology, flora, plant functional groups, soil-vegetation relationships.

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