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Surface pollen quantification and floristic survey at Shaheed Chandra Shekhar Azad (SCSA) Bird Sanctuary, Central Ganga Plain, India: a pilot study for the palaeoecological implications

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ABSTRACT

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Accuracy of vegetation reconstruction portraying land cover of the past is based on a careful analysis of pollen production, dispersal and their quantitative deposition. The present attempt to integrate sampling of pollen–vegetation spectrum through Crackles Protocols for vegetation surveys, at three spatial zones with intervals of 0–10 m (A), 10–100 m (B) and 100–1000 m (C) at Shaheed Chandra Shekhar Azaad Bird Sanctuary in Uttar Pradesh with tropical dry deciduous forest, is a maiden approach. In these studies, the standard vegetation survey around the pollen surface sampling sites is prerequisite for quantifying pollen–vegetation relationship in modern analogues of the past. The underlying theory of this approach is based on the fact that the relative pollen productivity (RPP) is constant in space and time within a region or biome. The floristic survey of the sanctuary is integral to this pilot study, Crackles Bequest protocol, and is intrinsic to run the Extended R–Value (ERV) model for obtaining estimates of relative pollen productivities (RPPs) for quantitative palaeoecological interpretations from tropical to subtropical forest covers in northern India. The modern pollen assemblage from surface sediment samples established the dominance of Poaceae pollen, along with those of *Acacia, Albizia* and *Mimosa* species. The multivariate principal component analysis (PCA), applied to quantify the data on survey of different vegetation communities revealed that out of the four identified vegetation communities, community D consisted of herbaceous patches including *Ageratum, Parthenium, Rumex, Tephrosia, Eclipta alba, Oxalis, Cannabis* and *Launea*, community B mainly comprised of tree taxa like *Terminalia, Barringtonia* and *Pongamia*, whereas the communities A and C represented a mixed vegetation comprising of trees, shrubs and herbs. The present maiden analysis through Crackles Bequest protocol method, served as a preliminary step to establish the quantitative 'pollen–based' vegetation reconstruction in the Gangetic Plains of Central India, and is expected to serve as a model for similar studies in other regions.

Key–words—Quantitative Pollen–vegetation relationship, Crackles Protocol, Relative Pollen Productivity, Shaheed Chandra Shekhar Azad (SCSA) Bird Sanctuary, Uttar Pradesh, India.