

ABSTRACT

A Floristic Survey of Isolated Limestone Communities: a biogeographic reconstruction of the vegetation of the Central Inlier of Jamaica, W.I.

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With its high degree of endemism and diversity of physical conditions that promote the development of unique floral communities, the vegetation of Jamaica has long provided an intriguing field for research. There has been an extensive history of study in this field at the micro and macro level of community organisation and plant taxonomy. Despite this however, there have been few attempts to contextualise the island's floral richness and endemism based on phytogeography. In this study, six small forest communities sharing a similar geological situation, isolated from each other on the edge of a vast geological divide are described and compared in terms of their floristics, forest structure and community similarity. On the rim of the Central Inlier, five sites: (1) Miss Laura's Hill, (2) Bird Cave Rock, (3) Quako Rock, (4) Christiana Hill and (5) Douglas Castle were sampled using the Point-Centered-Quarter method, and its results compared to that of a sixth site: (6) Oakes/ Lucky Valley, which was positioned within the inlier itself. In addition to this, a specific search was conducted for two rare, local endemics: *Pilea laurae* and *Ipomea saxicola*, the type specimens of which were first described at these sites. The combination of the two objectives

was an attempt to test a theory of a fragmented vegetation cover for the Central Inlier, based on the distribution of these two species.

The sites were shown to share more than one statistically significant relationship, based on both floristic data and non-floristic ecological parameters of forest density and mean basal area. Species at each site were ranked according to their importance value and their phytogeography compared. The floristic inventory for each site listed 62 species (31 endemics; 50% of species collected) for Bird Cave Rock, 57 species (17 endemics; 29%) for Quako Rock, 62 species (18 endemics; 29%) for Miss Laura's Hill, 43 species (17 endemics; 39%) for Christiana Hill, 28 species (5 endemics; 17%) for Douglas Castle and 22 species (0 endemics; 0%) for Oakes/ Lucky Valley. Species richness was greatest at Bird Cave Rock and Miss Laura's Hill, and species diversity as expressed by the Shannon-Weiner Index was greatest at Oakes/ Lucky Valley. No single species at any site scored consistently high importance values across sample replicates. Bird Cave Rock was the best structurally developed of the sites with the greatest representation of mesophanerophytes and evenness of field layer constituents. Mean basal diameter was greatest at Quako Rock while Christiana Hill had the highest absolute density of trees. Bird Cave Rock, Quako Rock, Miss Laura's Hill, Christiana Hill and Douglas Castle, showed larger proportions of species of narrow geographical range with the converse being true Oakes/ Lucky Valley. This would suggest that the forest at Oakes/ Lucky Valley has experienced an influx of generalist species, which may be associated with a disturbed community or arrested development of

that community. It may also suggest that the other five communities sampled, all located on the rim of the Central Inlier, have retained the vestiges of a much older forest community, preserved through long isolation and comparably less disturbance. *Ipomea saxicola* was described at every site except Oakes/ Lucky Valley. No occurrence of *Pilea laurae* was recorded at any site. This appearance of *I. Saxicola* may be a potential link to a shared history of these now separated forest communities, but on its own as a piece of evidence not sufficient to support a theory of a fragmented forest. More extensive community sampling across these, and similarly positioned 'rim-Inlier' sites is warranted to further compare community composition as well as chronicle individual community richness. Such a move may supply further grounds for re-examining the fragmented forest theory.

KEY WORDS: Floristic survey, biogeography, limestone, Central Inlier, forest structure, community similarity, Point-Centered-Quarter Method, fragmented vegetation, *Ipomea saxicola*, *Pilea laurae*.