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## **Species richness-environment relationships within coastal sclerophyll & mesophyll vegetation in Ku-ring-gai Chase National Park, New South Wales, Australia**

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### **Abstract**

Patterns in species richness from a wide range of plant communities in Ku-ring-gai Chase National Park, New South Wales, were examined in relation to a number of environmental variables, including soil physical and chemical characteristics. Total species richness and richness of three growth-form types (trees, shrubs and ground cover) were determined in duplicate 500 m<sup>2</sup> quadrats from 50 sites on two geological substrata: Hawkesbury Sandstone and Narrabeen shales and sandstones. Generalized linear models (GLMs) were used to determine the amount of variation in species richness that could be significantly explained by the measured environmental variables. Seventy-three percent of the variation in total species richness was explained by a combination of soil physical and chemical variables and site attributes. The environmental variables explained 24% of the variation in tree species richness, 67% of the variation in shrub species richness and 62% of the variation in ground cover species richness. These results generally support the hypothesis of an environmental influence on patterns in total species richness and richness of shrubs and ground cover species. However, tree species richness was not adequately predicted by any of the measured environmental variables; the present environment exerts little influence on the richness of this growth-form type. Historical factors, such as fire or climatic/environmental conditions at time of germination or seedling establishment, may be important in determining patterns in tree species richness at the local scale.