NPP Tropical Forest: John Crow Ridge, Jamaica, 1974-1978

Data Citation

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Description

Biomass and productivity were determined for four sub-types of an upper montane tropical forest along John Crow Ridge in the Blue Mountains of Jamaica, from 1974 to 1978. These measurements formed part of a study of nutrient cycling carried out in collaboration with the University of the West Indies. More recent studies have covered regrowth after hurricane damage and regeneration on landslides.

The John Crow Ridge study area (18.08 N 76.65 W) comprises four sub-sites (one measured at two similar locations), selected on the Grand Ridge of the western Blue Mountains, between Morce's Gap and John Crow Peak. Each sub-site consists of 8 or 10 contiguous permanent plots, each 10 m x 10 m. The forest is of low stature, and appeared to be completely undisturbed at the commencement of the study. The forest floor at one sub-site (Mor Ridge) was overlain by a 30-50 cm layer of mor humus with a high C/N ratio.

Above-ground net primary productivity was estimated to be in the range 654-997 g/m2/year (sum of litterfall and trunk/branch increment), or 854-1057 g/m2/year (including tree mortality). These figures are lower than for lowland tropical forest, with a greater proportion accounted for by leaf turnover; this is reflected by the relatively low stature of the upper montane forest. Long-term climate data is available from Cinchona Botanic Gardens, approximately 3 km south of the John Crow Ridge study area and at similar elevation. Daily precipitation data, December 1973 - March 1983, are also available on request. However, Tanner (pers. comm.) found a poor correlation between bi-weekly precipitation at John Crow Ridge and Cinchona, presumably because of the mountainous terrain.

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Image #JHN-1: Tropical montane forest near Morce's Gap, close to the John Crow Ridge study site, Jamaica - as it appeared in the early 20th century. In the centre is the tree-fern Cyathea pubescens; in the foreground Diplazium cenltidifolium and Diplazium altissimum. (Photograph taken about 1912 by Forrest Shreve. From Shreve, F., 1914. A Montane Rain Forest. Reproduced by kind permission of the Carnegie Institution of Washington).

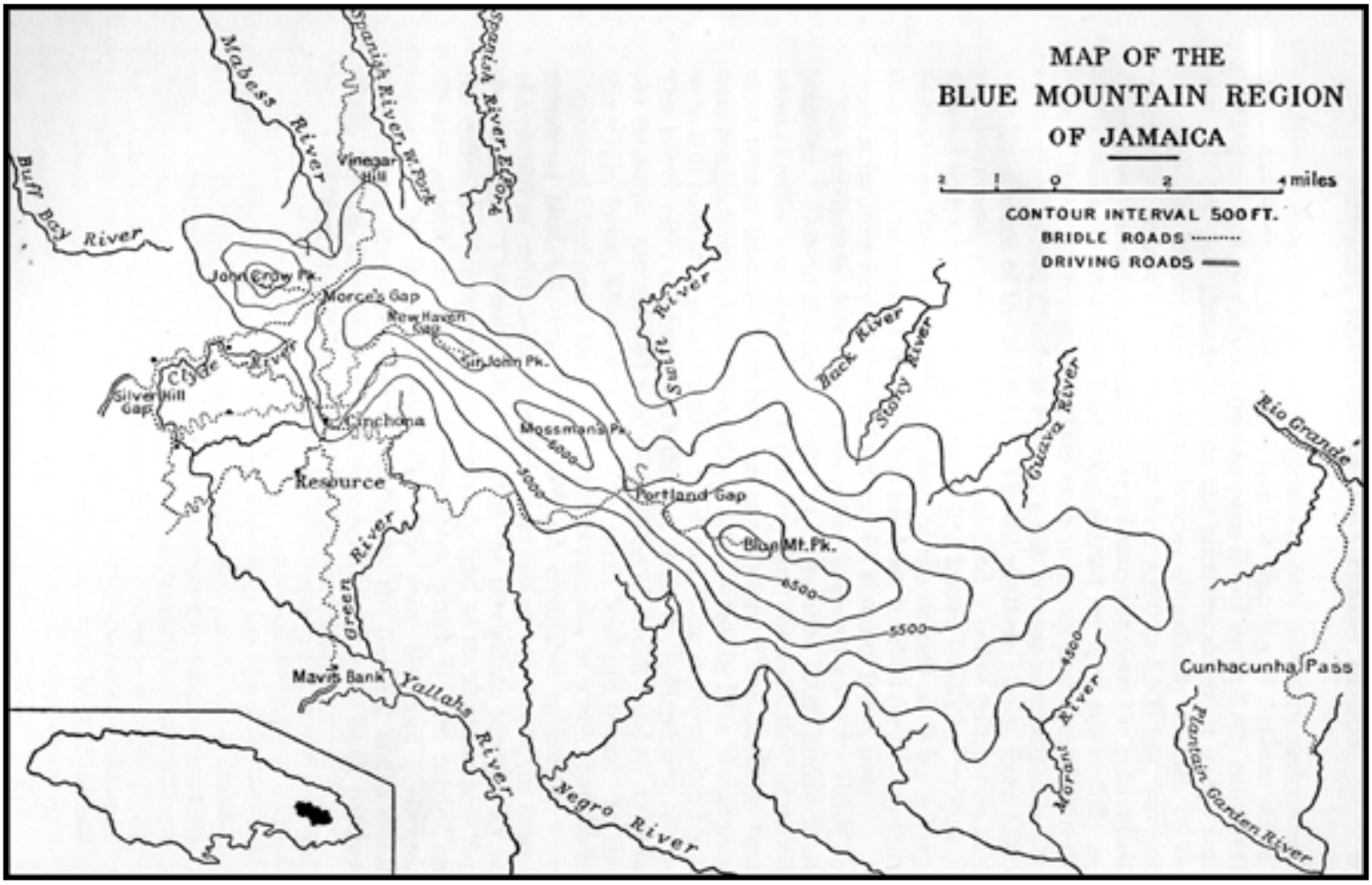

Image #JHN-2: Map showing location of the John Crow Ridge tropical forest study site, at the western end of the Blue Mountains, between John Crow Peak and Morce's Gap. (Map from Shreve, F., 1914. A Montane Rain Forest. Reproduced by kind permission of the Carnegie Institution of Washington).

Image #JHN-3: Mor Ridge sub-site at the John Crow Ridge tropical forest site, Jamaica. (Leaning tree in foreground is Clusia cf. havetioides; bromeliads are Tillandsia complanata and Vriesia sintenisii; herbs at ground level are Elaphoglossum latifolium and Peperomia clusiifolia. Photograph taken February 1975 by Dr. E.V.J. Tanner, Cambridge University, UK).

Image #JHN-4: Mull Ridge sub-site at the John Crow Ridge tropical forest site, Jamaica. (Species include Clethra occidentalis, which has contributed most of the fresh litter; Hedyosmum arborescens and Podocarpous urbanii. Photograph taken February 1975 by Dr. E.V.J. Tanner, Cambridge University, UK).

Image #JHN-5: Wet Slope sub-site at the John Crow Ridge tropical forest site, Jamaica. (Species include Clethra occidentalis, Hedyosmum arborescens, Cyrilla racemiflora and Cyathea pubescens, which was always short-stemmed on the Wet Slope. Photograph taken February 1975 by Dr. E.V.J. Tanner, Cambridge University, UK).

Image #JHN-6: Gap Forest sub-site at the John Crow Ridge tropical forest site, Jamaica. (Species include Cyathea pubescens, Cyathea furfuracea and Hedyosmum arborescens. Photograph taken February 1975 by Dr. E.V.J. Tanner, Cambridge University, UK).

Image #JHN-7: Soil profile at the Mor Ridge sub-site, John Crow Ridge tropical forest site, Jamaica. (Note 40-50 cm of mor humus ['duff' in USA]. Scale pole divisions are 12 inches [305 mm]. Photograph taken February 1975 by Dr. E.V.J. Tanner, Cambridge University, UK).

Image #JHN-8: Soil profile at the Mull Ridge sub-site, John Crow Ridge tropical forest site, Jamaica. (Scale pole divisions are 12 inches [305 mm]. Photograph taken February 1975 by Dr. E.V.J. Tanner, Cambridge University, UK).

Image #JHN-9: Soil profile at the Wet Slope sub-site, John Crow Ridge tropical forest site, Jamaica. (Note that weathering rock fragments at about 30 cm depth prevent further penetration with a spade. Scale pole divisions are 12 inches [305 mm]. Photograph taken February 1975 by Dr. E.V.J. Tanner, Cambridge University, UK).

Image #JHN-10: Soil profile at the Gap Forest sub-site, John Crow Ridge tropical forest site, Jamaica. (In the upper part of the profile, note the absence of mor humus, and relatively little dark brown staining by mull humus, compared to Mor Ridge soil and Mull ridge soil, respectively. This is despite the fact that total litterfall rates are rather similar at all three sub-sites [661 g/m2/yr Mor; 554-580 g/m2/yr Mull; 647 g/m2/yr Gap Forest]. Scale pole divisions are 12 inches [305 mm]. Photograph taken February 1975 by Dr. E.V.J. Tanner, Cambridge University, UK).