

The Influence of Cyclones on the Dry Evergreen Forest of Sri Lanka¹

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ABSTRACT

I assessed damage caused by a cyclone in November 1978 to a dry evergreen forest in Sri Lanka. Damage included defoliation, breakage of twigs, branches and trunks, tree falls and post-cyclone tree mortality. Within the 3 km² study area there was a trend for increasing damage with forest height. Tree species in the upper forest layers had significantly more falls and post-cyclone mortality than trees in the more sheltered subcanopy and shrub layers. Mortality was significantly greater among trees which lost 40 percent or more of their branches and trunks than among trees with lesser crown damage. Defoliation and twig loss were extreme in the discontinuous upper layers and probably contributed to the greater tree mortality evident there. Overbrowsing by folivorous primates after the cyclone may have contributed to the demise of some preferred feeding trees. Total tree loss was 46 percent from the upper forest layers, 29 percent from the subcanopy, or 40 percent from all tree layers. Five upper layer tree species were subject to tree losses of 80 to 100 percent representing a virtual elimination of 22 percent of species from the upper layers or 12 percent from the forest.

Dry evergreen forest formerly covered 80 percent of the island's land area, and often has been described as "old secondary climax" in recognition of past disturbance. Extrapolations from meteorological data indicate that 33 to 44 percent of the range of dry evergreen forest may be subject to cyclone damage per century. The species composition of dry evergreen forest on a local and wider geographical scale typically is fairly uniform in the subcanopy layer, but variable in the upper layers. I suggest that recurrent cyclone damage may be an important factor contributing to succession in dry evergreen forest and to the variation in species composition of the upper layers.